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NATIONALISATION AND INDIVIDUALITY

IN conversations with gas engineers on several occasions recently the view has been put to us that when the Area Boards get into full swing, then many engineers in the various areas who have hitherto enjoyed the exercise of responsibility and a sense of individual freedom will find themselves in this regard stifled by inelastic orders from above—that they will find themselves in the 'supporting cast' where the bill contains a few dictatorial stars. The tempo of their work, it is argued, will be slowed down, there will be no premium on initiative, local pride will no longer exist in relation to gas service, and a damper will be put on zest and enthusiasm. This attitude seems to us premature and unhelpful, and we hope their barks are worse than their bites. It is no fault of those gas engineers who have accepted appointments to the Area Boards that the gas industry has been nationalised. Maybe the people of the country do not know what they are in for, but the fact remains that they have swallowed, and apparently digested, the concept that the fuel industries of the country should be nationalised. Those appointed to the Boards should be given a chance, which in effect means that they should have the backing of their colleagues in the industry, and not have to meet with opposition before the game has begun. We say this while maintaining that unless individual responsibility, initiative, and enthusiasm are encouraged in every practical way then the industry and the gas consumer will inevitably suffer. But is the gloomy attitude justified? We reported in our columns a fortnight ago the remarks of Colonel W. M. Carr, Chairman of the North Western Gas Board, at the opening of a £1,500,000 scheme of reconstruction at Rochdale. 'One thing I will not do,' he said, 'and that is to take responsibility from the shoulders of the man on the spot who has to look after the consumer.' And he added: 'I can assure you that in this attitude of mind I have the support of those members of the Board who are already appointed.' Other Area Board Chairmen have assured us that decentralisation and the encouragement of individuality within a common policy will be the Board's aim. Are we to doubt the sincerity of such utterances?

Another view we have heard is that, apart from making the former dynamic and go-ahead gas engineer and manager a cipher in a large top-heavy scheme all too permeated with politics, the iron curtain will fall on free discussion even of technical matters. It has been suggested to us that if, for example, one of the humbler members of a Board's engineering staff believes through his experience that a new type of plant has great potentialities which merit attention and trial, he will be precluded from airing his views on such a matter in an open forum if those views differ from the opinions of the top chiefs. Should a state of affairs like this eventuate it would be a sorry day indeed for the gas industry. But is the fear well founded? We have heard of no suggestion that free expression of thought is to be otherwise than encouraged. All the evidence seems to us to point in the direction of encouragement. And we recollect the remarks made some time ago by the present Minister of Fuel and Power when he was referring generally to the subject of teamwork. 'We talk a lot about teamwork,' he said, 'and we pay our tribute to it and recognise the importance of working in a team, but the individual does not always come into the team all at once. When we are dealing with human beings between whom there has to be established a new relationship we do not expect that everything will run smoothly from the start.' The gas industry is undergoing a period of readjustment; it has also a well earned reputation for teamwork. We hope that, in spite of the changes which have taken place and are still occurring, teamwork will remain a strong element in the new structure.

DUST IN THE RETORT HOUSE

THE contribution of the modern gasworks to the dust content of the urban atmosphere should be quite small. The potentiality in this respect of the worst offender, the water-gas plant, is easily checked by the fitting of a grit arrester. But as an internal problem particularly in the coal store and retort house and the coal and coke handling and processing plants attached thereto, dust is a serious matter. The elements of the problem and some very interesting data are well set out in the paper 'Dust Problems in Gasworks Practice' presented by A. J. S. Wiseman, of the Gas Light and Coke Company, to the London and Southern Juniors. The paper, together with our report of the discussion, will be published in *Gas*.

The problem has been accentuated by the concentration of high capacity carbonising plant per unit of ground space in modern designs, particularly with the continuous vertical retort. Three or four times as much coal and coke pass through the retort house today as through a building of equal cubic content 40 years ago. In modern retort house design a good deal of attention is paid to the provision of apparatus and to the arrangement of the plant itself, its bunkers, platforms, and ventilation, to reduce the dispersal of dust within the house and to prevent its emission to the outside. Modern standards of amenity for all grades of labour demand that dust and fumes in the atmospheres of all working places should be reduced to the minimum.

Dust allowed to settle and lie on the rolled steel sections of structural steelwork may lead to extensive corrosion of these members, particularly at the joints and in the inevitable 'pockets.' The dust is not perhaps injurious in itself, but it acts as a trap for moisture rendered acid by absorption and corrosive reaction in the warm and often humid atmosphere of the retort house may be very rapid. Dust in the retort house is either that of coal or of coke. Deposits of coal dust entail fire risks, but their abrasive action on moving parts is not nearly so serious as that of the fine dust of coke. Coke dust may be so fine that it is carried into bearings by the lubricants themselves, leading to very rapid wear and tear which can be mitigated only by the greatest care in enclosure and maintenance. It is therefore important not only to check the emission and dispersal of coal and coke

dust at the points of origin but to provide apparatus to collect and remove that which settles within the building.

Much has been done by enclosing bunkers and feed points and by the arrangement of floors to localise the deposit of coal dust, particularly in the continuous vertical retort house where charging is dust free and there is only the filling of the overhead storage bunkers to contend with. Mr. Wiseman deals with the difficulties in the horizontal retort house, where, apart from spillage the true dust dispersal may reach 200 lb. per 100 tons of coal charged, presumably with the projector-type of machine.

But the coke-dust problem is a more formidable one. It has been remarked that coke-dust is of two kinds, the almost molecular dust resulting from the steam-carbon and other reactions in the retort, and that resulting from the abrasion of one piece upon another. It has further been remarked that if the former can be removed at the point of discharge it will never reappear, whereas the second is constantly occurring, right down the stream of handling, grading, and storage to the point of dispatch to the customer. And that it is possibly the very fine powder which gives so much offence in the consumers' storage. It is clear, too, that if this fine dust is suppressed by water spraying or immersion it will reappear when the coke dries out. It is true, of course, that it can be removed at this latter point, and as long as its removal is complete at or before the de-dusting screens at the storage bunkers outlets to bags or vehicles there will be no nuisance to the consumer.

Apart from the interesting proposal to adapt the water-immersion conveyor (a sort of flume-conveyor) to the vertical retort plant, possibly the best result is obtained by a combination of moderate spraying within the coke discharge chamber of the retort and the dust extractor fitted to the conveyor filling chute. Several very interesting designs of the latter are described by Mr. Wiseman. Power consumption may be considerable. In a recent installation for a large retort house with a throughput of 12,000 cu. ft. of air per minute it was estimated that 22 B.H.P. would be sufficient for a plant using three or four standard washer filters.

The problem of the dust entrained with producer gas into the retort settings is one of importance and interest. This dust may give rise to costly damage by fusion and corrosive action on the combustion sides of retorts and may be a nuisance when deposited in flues and passages, entailing costly cleaning and maintenance. This dust can be completely removed only by washing, and incidentally cooling, the gas before it enters the combustion chambers, with consequent loss of sensible heat and reduction of the thermal efficiency of the process as a whole. Mr. Wiseman refers to a design now in use in which an attempt is made to reduce the dust in a simple form of separator which is stated to remove 70% of the dust in the gas with insignificant, if any, heat loss. Another cause of dust deposit within the retort settings is that of entrainment with the secondary air. This is best reduced by keeping dust out of the air, but in any case it can be guarded against by carefully shielding the inlets from possible sources of contamination.

Outside the retort house dust is given off at every point where the material is transferred from one conveyor to another, where hoppers are filled, and particularly in the coke screening plant. Coal dust is perhaps adequately controlled by hooding and covering at these points, but in modern lay-outs there is a tendency to fit dust removal to coke screening plant. Drummond has drawn attention to the need for care in the design of hoods for this purpose and for the necessity to provide sufficient air velocity—he suggests 3,000 ft. per minute with a dust inlet vacuum of from 1½ to 2 in. water gauge—to keep the dust in suspension throughout the ducting up to the point of separation.

There is a great deal of useful information in Mr. Wiseman's paper about the nature of dust and its measurement which we have not seen so conveniently collected elsewhere.

GAS REGULATIONS

In accordance with Section 26 of the Gas Act, 1948, the Minister of Fuel and Power has issued the Gas (Increase of Security Values) Regulations, 1949, which became effective on Mar. 16. The regulations prescribe six months as the period within which the stockholders' representative for any company which has suffered loss of revenue from war causes may make representations to the Minister for an increase in the value of the company's securities (other than debentures, debenture stock or mortgages) for compensation purposes.

OPEN TO THE PUBLIC

During January the British Electricity Authority (South Eastern Division) invited the general public to visit the Kingston Power Station, which was opened recently by H.M. the King. The undertaking was open for inspection on Wednesday and Friday afternoons throughout the month, and those desirous of making a visit had to apply for tickets of admission. In spite of these restrictions over 1,400 people came along, the greater number of whom, it is reported, were members of the lay public. In view of this response and obvious interest, it is likely that further opportunities to visit this and other power stations will be afforded during the summer months. It may well be that the newly appointed Area Gas Boards will be influenced to go and do likewise in the case of some of their larger undertakings.

TOO SHARP AN AXE

At the close of the Committee stage of the Gas Bill, Mr. Hugh Gaitskell announced that members of his party had resolved that never again should a Bill be committed to such a committee without having the guillotine resolution. Mr. Strauss is evidently of the same opinion. On Thursday, Mar. 17, the House of Commons Standing Committee on the Iron and Steel Bill completed the Committee stage. The guillotine played the leading part in this performance. It solemnly beheaded two hundred amendments from the Opposition. Of 556 amendments, 83 were accepted, comprising 44 Ministerial, 6 Labour back-bench and 33 Opposition, as against 883 on the Gas Bill. An average of 55 minutes was spent discussing each amendment during the Gas Bill. We wonder how long the guillotine took to fall on 200 on Thursday last. Next time it is used perhaps it will not be quite such sharp practice.

PROGRESSIVE SELLING

'Sales staffs can no longer be permitted to sell apparatus indiscriminately. For some time to come their skill and energy must be directed to ensure that the industry obtains the load with which it can cope, which is economic to the undertaking, and of the most efficient service to the consumer.' This is from a recent paper by Mr. J. W. Rodgers, Sales Superintendent to the United Kingdom Gas Corporation, to the North Western District Gas Salesmen's Circle; and we are sure that the approach suggested is the right one to preserve and enlarge consumer goodwill. The author gave a glimpse of how the United Kingdom was tackling the sales angle in the year before the war. The salesman was given incentive, and it was decided to remunerate him by way of a 'small fixed salary' plus a small commission on the first £200 cash value of sales per month, increasing above this datum line to 6% on sales. Supervisors were on a fixed salary plus a commission on the sales value of their salesmen. The district manager was on salary plus a commission on the sales value of the total area. The author is in no two minds that the system worked—and, indeed, the figures he gave in his paper support this contention. To-day the circumstances which made for the success of the system no longer hold. If 'sales staff can no longer be permitted to sell apparatus indiscriminately, so must their efforts to main consumer goodwill be assessed in a different way financially.'

THE OLD GUARD AND THE NEW

We shall be publishing a little later in our monthly *Gas* two papers presented to the Eastern Junior Gas Association at Bury St. Edmunds recently, one by Mr. E. H. Winch, Deputy Engineer and Manager of the Cambridge University and Town Gas Light Company, on 'Education in the Gas Industry,' and the other by Mr. R. W. Hilham, Distribution Engineer of the Col-

chester Gas Company, on 'Public Relations in the Gas Industry.' Both were written with nationalisation in mind; the one held great hopes of improved educational facilities under integration, and the other—deliberately designed to provoke discussion—suggested that the people who are already engaged in relations with the public are all that is required, provided, of course, that they do their work efficiently. The members were the guests of the Directors of the Bury St. Edmunds Gas Company for luncheon and tea, and some of them also visited the works of the Company during the morning. Major S. J. M. Sampson, Chairman of the Company, has a family connection with the industry dating from 1840, when his grandfather became Chairman of the Hendon (now the North Middlesex) Gas Company. His father was also on the same Board, and Major Sampson himself joined the Bury St. Edmunds Board within a few weeks of his father's death. It was therefore with obvious emotion that he described last week's event as 'the old guard presenting arms to the new.' Major Sampson and his colleagues will be 'dismissed' (he used the word emphatically) on May 1, and it will be for the new guard to see that the industry renders no less efficient service than throughout the past. Wishing the Eastern Junior Gas Association success and prosperity, he expressed the view that it would be incredible that under the new regime such an Association could be dispensed with.

CAREERS IN THE MINE

The National Coal Board, which publishes the luxurious magazine *Coal*, addressed to miners, has added to its list a booklet entitled *My Day*, written by a colliery manager, and reprinted from the appendix to a book entitled *Coal—Facts about an Unknown Industry*. The extracts from the author's diary are interesting and indicate the manifold responsibilities and the extended working day of a colliery manager, who still, so it would seem, has to combine the activities of an electrical, mechanical, and civil engineer with the laws and principles of the mathematician, to say nothing about the chemist and the geologist. One-third of this booklet is taken up by an introduction written by Mr. A. M. Bryan, H.M. Chief Inspector of Mines, which reveals its fundamental purpose. "I set out," he writes, "to convince you that managing a pit is a worthwhile career of absorbing interest in an industry offering good opportunities—an industry which makes a vital contribution to the prosperity of the nation." The booklet, therefore, is part of the crusade for new, skilled blood in the mines. Mr. Bryan says his piece with commendable frankness and only a small amount of glamourising. In order to get the coal the country needs, 200 new responsible mining engineers are required per year. To achieve that objective, the Board, for the second year in succession, is offering 100 scholarships for degree courses in mining subjects; 50 of these are being offered to young men already employed in the coal-mining industry and 50 to sixth form schoolboys taking their Higher Certificate. Last year the number of satisfactory candidates from within the industry was considerably higher than that of the schoolboys, and if that is the case in 1949 the examiners may recommend an increase in the number awarded to miners. The Board meets all University and maintenance costs for the whole length of the degree courses. But it appears to us that the reward for the qualified colliery manager is not commensurate with the payment given to others, seemingly less qualified, in the ranks of the N.C.B.

COAL TARGET FOR 1949

The first 10 weeks of coal production this year have resulted in a total output of 42,386,000 tons, which is slightly over a million tons more than had been produced at this time last year. The increase is attributed to a higher output per manshift (overall) of 1.15 tons compared with 1.11 tons in the same period of 1948, and has been achieved without any increase in the number of workers effectively employed. This is all the more creditable in that it has occurred at a time when involuntary absenteeism is high and the physical condition of those who remain at work has been taxed by the long winter months. Nevertheless, the achievement must now be assessed objectively in the light of the target which has been set for the coal industry in the Economic Survey for 1949. The Survey aims at a total output for this year of between 215 mill. and 220 mill. tons; attainment of the minimum figure calls for an increase of some 6½ mill. tons over 1948. If the present rate of production is maintained throughout the year the total increase will be in the region of only 5 mill. tons. The Survey lays down three 'keys to success'— 'more regular attendance, a greater output per manshift, and an increase in the number of faceworkers.' It is hoped at the end of the year to have 303,000 faceworkers, against 296,000 at the end of 1948. So far this year all these conditions have been fulfilled; output per manshift has increased, voluntary absenteeism has fallen to the comparatively low figure of 5.68%, and an average number of 250 new faceworkers has been recorded each week. It is unlikely, therefore, that the increase of 6½ mill. tons will be achieved by concentrating solely upon the 'three keys to success.' No mention has been made in the Survey of any large-scale extension of mechanisation in the pits. Lord Balfour, Chairman of the Scottish district of the National Coal Board, made it clear in a paper given on March 12 that if the output per manshift is to be raised from the 1948 level of 22.15 cwt. to the desired level of 30 cwt. by 1965, there must be a capital expenditure in the neighbourhood of £300 mill. The target for this year does not, of course, require such an output per manshift, but it is doubtful whether it will be reached unless a start is made with this programme of capital investment. As yet there is no indication that this is the intention of the National Coal Board.

Diary

Mar. 25.—**British Gas Council:** Conference of Gas Salesmen, Caxton Hall, Westminster, 10.15 a.m. 'Salesmanship Tomorrow,' Charles Knights, Managing Director, Marshall Hardy, Ltd.; followed by afternoon visits to Ideal Home Exhibition, Olympia, and 'The Nation's Wealth' Exhibition, Gas Industry House.

Mar. 25.—**North British Association of Gas Managers:** Spring Meeting, Edinburgh.

Mar. 26.—**Scottish Junior Association (Western District):** President's Day at Greenock.

Mar. 28.—**Women's Gas Council:** Finance and Emergency Committee, Gas Industry House, 12.30 p.m.

Mar. 29.—**Southern Association of Gas Engineers and Managers:** 'The Preparation and Examination of Gas Fitters under a Regional Classification Scheme,' J. L. Wilson. Gas Industry House, 2.30 p.m.

Mar. 29.—**Midland Junior Gas Association:** 'The Production and Employment of Products of Combustion in Small High Temperature Gas Furnaces,' J. F. Waight, Birmingham Gas Department, 6.30 p.m.

Mar. 29.—**Industrial Gas Development Committee:** Meeting, Leeds.

Mar. 30.—**London and Southern Junior Gas Association:** Visits to Electrolux, Ltd., and to George Kent, Ltd., Luton.

Mar. 31.—**London and Counties Coke Sales Circle:** 'Experiences in Dealing with Coke Complaints,' G. H. Fuidge (South Metropolitan Gas Company). Gas Industry House, 2.30 p.m.

Mar. 31.—**Midland Counties Coke Association:** Tenth Annual General Meeting, Grand Hotel, Birmingham, 2.30 p.m.

April 7.—**Midland Junior Gas Association:** President's Day at Birmingham. Afternoon visit to Stechford works of Parkinson Stove Co., Ltd.

April 8.—**London and Southern Junior Gas Association:** 'Some Random Thoughts on Gas Distribution Practice,' M. E. Lee. Edgware Road Office, Gas Light and Coke Company, 7 p.m.

April 9.—**Scottish Junior Gas Association (Eastern District):** Short Paper Day at Dunfermline.

April 12.—**National Federation of Gas Coke Associations:** General Committee. Gas Industry House, 10 a.m.

April 12.—**British Gas Council:** Central Board, Gas Industry House, 2.30 p.m.

April 21.—**Southern Association of Gas Engineers and Managers:** Meeting at Exeter.

April 22.—**Northern Junior Gas Association:** 'A Theoretical and Practical Study of the Removal of Hydrogen Sulphide from Coke Oven Gas.' T. R. Wicks. Darlington Gas Works.

April 22.—**London and Southern Junior Gas Association:** Reception and Dance.

April 23.—**Manchester District Junior Association of Gas Engineers:** 'The Juniors and the Press,' Norman Smith. Engineers' Club, Manchester.

April 23.—**London and Southern Junior Gas Association:** Visit to Ponders End Works of the Tottenham and District Gas Company.

April 26.—**Southern Association of Gas Engineers and Managers (Eastern District):** 'The Selection and Design of Gas Condensing Plant,' K. W. Francombe and A. G. Grant. Gas Industry House, 2.30 p.m.

Personal

Mr. MARK NORMAN has been appointed a Director of the Staveley Iron and Chemical Co., Ltd.

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Mr. F. SCOPES, Managing Director of the Stanton Ironworks Co., Ltd., has been appointed Chairman of the British Coking Industry Association.

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Provost GEORGE BRUCE, Engineer, Manager, and Secretary of St. Andrews Gas Company, Fife, is retiring from public service after 28 years on the Council and six years as civic chief.

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Mr. LEWIS FLETCHER has been appointed Scottish Representative to the Parkinson Stove Co., Ltd., in succession to his father, the late Mr. Lewis Fletcher. He will operate, as previously, from the Company's Glasgow office in Camden Street.

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In view of the approaching retirement of Lieut. Col. W. FRENCH C.B.E., D.S.O., M.C., the City and Guilds of London Institute has appointed Major General CYRIL LLOYD, C.B., C.B.E., T.D., Administrative Director of the Department of Technology as from Oct. 1 when he will relinquish his present post as Director of Army Education.

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Mr. N. R. JUNKISON has been appointed Chief Industrial Representative of the Gas Light and Coke Company. Mr. Junkison entered the Company's service as a gas supply pupil in 1929, and joined the Industrial Section in 1934. He thus takes over the position previously held by Mr. T. V. GARRUD, now Manager of the Headquarters Division of the Gas Light and Coke Company.

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Mr. R. H. DUXBURY, whose impending retirement from the post of Director, Engineer, Manager, and Secretary of the South Bank and Normanby Gas Company was referred to briefly last week, has been compelled to take this step by reason of ill health. Since his appointment at South Bank in 1928 he has served for three periods on the Council of the Institution of Gas Engineers (1934-35 and 1938-41 as District Member and 1942-45 as Ordinary Member), and was President of the North of England Gas Managers' Association in 1934-35. After serving for some years as Hon. Secretary of the Northern Region of the National Gas Council he continued as Joint Hon. Secretary of the Northern Region of the British Gas Council, Federation of Gas Employers, and Joint Industrial Council, as well as of the Gas Advisory Board. He has also been a member of the National Joint Industrial Council and of the Central Committee of the Federation of Gas Employers. His father was formerly Engineer of the Oldham Gas Department, and a member of the third generation, in the person of Major Alan Duxbury, is carrying on the family tradition as Deputy Engineer of the Peterborough Gas Company.

Obituary

Mr. THOMAS EDWIN MADDOCKS, who, when he retired in 1944 after 58 years with the Kettering Gas Company, was the Company's Managing Director and Secretary, has died, aged 86.

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Professor C. H. Lander, C.B.E., D.SC., Dean of the Military College of Science and Emeritus Professor of Engineering in the Imperial College of Science and London University, died suddenly at Shrivenham on Mar. 17 at the age of 67. He was born in 1881 and graduated with first-class honours at Manchester University in 1905. He proceeded to M.SC. in 1908 and was awarded a doctorate for original work in heat flow and surface friction in 1916. His practical training in engineering took place with the Manchester Ship Canal Company. The year after his graduation he joined the teaching staff of Manchester University and remained there until 1916. During this period he also worked for the Home Office and was in charge of experiments in heating and ventilation for the humidity committee which were the basis for the regulations now in force under the Factory Acts. During the 1914-18 war he served in the R.N.V.R. and obtained one of the awards for inventors. In 1920 he became assistant to the Director of Fuel Research, and two years later succeeded Sir George Beilby as director. He was made a C.B.E. in 1928. He returned to academic life in 1931 as Professor of Engineering in the Imperial College of Science and London University, where he greatly developed the teaching not only of mechanical but also of chemical engineering and encouraged much post-graduate research. His experience was invaluable during the recent war and he took a prominent part in the development of gas turbines and jet propulsion for the Ministry of Aircraft Production and of flame-throwers and petrol-burners (F.I.D.O.) for dispersion of fog over airfields. He was a member of many Government committees and was assessor to the Royal Commission on the Coal Industry in 1925.

AREA BOARD STAFF APPOINTMENTS

North Thames Gas Board

The North Thames Gas Board announce that to meet the number of problems arising in advance of vesting date they have made certain appointments as follows:—Dr. H. HOLLINGS, Controller of Research; Mr. O. W. WELLS, Chief Accountant; Dr. J. BURNS, Deputy Chief Engineer; Mr. S. G. ABERDEIN, Commercial Manager; Mr. W. S. GOOCH, Controller of Services; Mr. R. N. B. D. BRUCE, Staff Controller; Mr. H. C. EXELL, Controller of Stores; Mr. H. S. C. EVERARD, Manager, Market Research Section; Mr. D. G. ROSE, Coke Manager; Mr. L. O. V. HAYWARD, Coal Officer.

Mr. N. Willsmer, Chief Engineer of the Gas Light and Coke Company, who will retire on April 30, has agreed to give his services to the Board in a consulting capacity up to that date.

Northern Gas Board

Appointments have been made by the Northern Gas Board to the Divisions named :—

Blyth	W. Sutcliffe
Newcastle	J. E. White
Hexham	H. D. Lees
Sunderland	C. C. Walmsley
Darlington	F. Wilson
Stockton	F. L. Scaife
Middlesbrough	J. W. Pallister
Carlisle	J. G. Aitken
Workington	J. G. Pope
Penrith	A. Field

South Eastern Gas Board

The South Eastern Gas Board announces that the following further appointments are being made :—

R. PRINCE, M.INST.GAS E., Engineer and General Manager of the Brighton, Hove and Worthing Gas Company, to be Chief Engineer.

V. W. STANTON, F.C.W.A., Commercial Manager of the South Suburban Gas Company, to be Commercial Manager.

C. E. CAREY, B.SC., Chemical Products Manager of the South Metropolitan Gas Company, to be Chemical Products Manager.

F. S. EVANS, Coke Manager and Products Sales Manager of the South Metropolitan Gas Company, to be Coke Manager.

A. H. ANDREWS. M.INST.C.E., Chief Engineer of the South Metropolitan Gas Company, to be Controller—Metropolitan Division.

R. N. BARNETT, F.S.A.A., Chief Accountant of the South Metropolitan Gas Company, to be Deputy Chief Accountant, with special responsibility for the accounts of the Metropolitan Division.

A. S. HOLDEN, F.C.I.S., Joint Secretary of the South Metropolitan Gas Company, to be Deputy Controller—Metropolitan Division.

C. STOTT, M.C., B.SC., M.I.CHEM.E., Assistant Chief Engineer and Engineer, East Greenwich Works of the South Metropolitan Gas Company, to be Deputy Chief Engineer and Engineer—Metropolitan Division.

H. A. PROBIN, A.C.A., General Manager of South Eastern Gas Corporation, Ltd., to be Manager—Kent County Division.

C. R. M. CROFT, B.A., A.M.INST.C.E., A.M.INST.MECH.E., Deputy General Manager of the Wandsworth and District Gas Company, to be Manager—Sussex Division.

West Midlands Gas Board

Mr. G. le B. Diamond, Chairman of the West Midlands Gas Board, addressing the annual luncheon of the Midland Association of Gas Engineers and Managers at Birmingham, on Mar. 17, announced that the Board had set up seven divisions and had appointed the following as Divisional Managers :

North Staffordshire.—Mr. J. E. STANIER, Chief Engineer and General Manager, Stoke-on-Trent Corporation Gas Department.

Wolverhampton District.—Mr. FRAS. C. BRIGGS, Engineer and Managing Director, Dudley, Brierley Hill, and District Gas Company.

Walsall Division.—Mr. E. HARDIKER, Engineer and Manager, Smethwick Corporation Gas Department.

Birmingham Division.—Mr. J. E. WAKEFORD, Engineer and Manager, Coventry Corporation Gas Department.

Warwickshire.—Mr. A. ALLEN, General Manager and Chief Engineer, Walsall Corporation Gas Department.

Worcestershire and Herefordshire.—Mr. C. F. W. RENDLE, Engineer and Works Manager, Redditch Gas Company.

Shropshire.—Mr. C. M. D. BELTON, Director, Engineer, Manager and Secretary, Shrewsbury Gas Light Company.

It was further announced that the appointment of Mr. F. H. CURETON (Birmingham Corporation Gas Department) as Secretary of the Board had been confirmed. Mr. J. SWAN, B.COMM. (Commercial Manager, Coventry Gas Department), had been appointed as Deputy Secretary, and Mr. J. H. WAINWRIGHT, Engineer, Manager, and Secretary of the Halesowen Gas Company, and Hon. Secretary and Treasurer of the Midland Association, had been appointed Industrial Relations Officer.

CLAYTON SPORTS ASSOCIATION

The annual dinner of the Clayton and Allied Firms Sports Association was held recently. The Association undertakes the sporting (football, cricket, swimming, fishing, &c.) and social (dances, children's entertainments, &c.) activities for the whole group of inter-connected firms comprising Clayton, Son & Co., Ltd., Goodall Clayton & Co., Ltd., Deighton's Patent Flue and Tube Co., Ltd., and the Yorkshire Patent Steam Waggon Co.

The photograph was taken prior to the dinner.

Left to right: Mr. Herbert Sutcliffe (the famous cricketer, who replied to the toast of the guests), Mrs. Sutcliffe, Mr. R. G. Thomson (Chairman of the group, who presided at the dinner), Mrs. Thomson, Dr. G. E. Foxwell (Chairman, Epsom Sports Club, and a member of the firm, who proposed the toast of the Association).

KIRKCALDY GASWORKS PROJECT

A public enquiry was held at Kirkcaldy on Feb. 24 into an application by Kirkcaldy Town Council for a special order to erect new gasworks at Skeddoway, between Thornton and Kinglassie. The enquiry was conducted by Mr. H. A. Shewan, advocate, appointed by the Minister of Fuel and Power.

Objectors were Fife County Council, who consider the proposal would prejudice the future planning of the county in gas development. They further objected on the grounds that the proposed site was in an area reserved as a green belt and adjacent to a hospital.

Mr. John Cameron, K.C., instructed by Mr. G. D. Shaw, advocate, and Mr. Charles D. Chapman, Town Clerk, Kirkcaldy, appeared for the petitioners. Mr. R. P. Morrison, K.C., instructed by Mr. A. Thomson, advocate, and Mr. Matthew Pollock, Deputy County Clerk, appeared for the County.

Mr. Cameron said the Special Order promoted by the Town Council sought powers to acquire and hold certain lands to construct and maintain gasworks on these lands and to acquire or erect on those lands dwelling houses.

Kirkcaldy Corporation were gas suppliers for a substantial area. In addition to the burgh, they supplied Kinghorn, Auchtertool, Kinglassie and Markinch. The new town of Glenrothes was within the area of supply. In addition, the burgh had been making a supply to West Wemyss Gas Company and Kinghorn Gas Company, and recently an accommodation supply to Burntisland, on the order of the Minister of Fuel and Power.

Mr. D. L. Dickson, Kirkcaldy, Engineer and Manager, stated that the output had risen from 297 mill. cu.ft. in 1939 to 505,557,000 cu.ft. in 1948. The consumption was estimated to rise to 789 mill. cu.ft. within five years. The capacity of the existing gasworks at Kirkcaldy was 540 mill. cu.ft. Over 100 mill. cu.ft. was being produced by uneconomical methods.

The increase in consumption over the past 10 years was partly explained by the increase in population. The population of Kirkcaldy in 1939 was 45,685 and in 1948 approximately 48,000. In 1948 there was an industrial consumption of over 40 mill. cu.ft. There was no recorded industrial consumption in 1939. During the next five years industrial consumption alone was expected to increase by 40 mill. cu.ft.

The present storage capacity at Kirkcaldy gasworks was one mill. cu.ft., or 12 hours' storage. In five years' time this would be reduced to eight hours.

Mr. David Fulton, Engineer and Manager at Helensburgh, appointed consultant by Kirkcaldy Town Council, said the project was necessary. He envisaged the new gasworks serving a large area.

Mr. F. P. Lugar, Chief Surveyor, Cumnock Sub-Area, National Coal Board, said he had made a survey of several sites and found that Skeddoway was the best.

Councillor Peter W. Smith, Kirkcaldy, Gas Convener, said they had decided on the Skeddoway project prior to the passing of the Gas Act, 1948. They had been advised that in connection with the Rothes Pit, now under construction, there would be near Skeddoway a mile-long coal bing and 180 acres of marshalling yards. In view of this they did not consider gasworks would spoil the amenities.

County Councillor John Sneddon, Kelty, a member of Glenrothes Development Corporation, said his Corporation had written to the Minister of Fuel and Power asking for delay in order to consider the question.

For the County Council Mr. Morrison said he had altered his intention to lead evidence. He submitted that on the promoters' own evidence there was no conceivable justification for the order they craved. It was preposterous they should seek ground for a gasworks when such a project could not be undertaken for at least seven years.

Mr. Cameron declared it was fantastic for the County Council to claim the green belt would be invaded by a little popgun of a gasworks of 29 acres, whereas on the frontier, just beyond the iron curtain, there was to be 180 acres of marshalling yards and a mile-long bing.

The Commissioner intimated he would make his report to the Minister of Fuel at an early date.

PROFESSIONAL ENGINEERS' APPOINTMENTS BUREAU

The Professional Engineers' Appointments Bureau reports that during 1948 the average number of engineers on the register was 559, 106 of these being primarily civil, 252 mechanical and 201 electrical engineers, compared with 634 on the register in 1947. Over 90% of those registered were in employment, though often unsuitable, and the majority of those unemployed were young men requiring practical training or men over the age of 45. The number of notifications of vacancies during the year was again satisfactory, being 1,126 compared with 1,048 in 1947. Since 1945 the Bureau has found appointments for over 580 engineers and during 1948 appointments fees totalling £1,048 were received from 117 engineers. The number of offers exceeded the number of acceptances, due primarily to the housing situation, but an additional factor has been the neglect of some employers to give full details of the particular vacancy to the nominated candidates before calling them for interview. The advisory services of the Bureau have been used extensively by registered engineers and employers.

GASHOLDER PAINTING AT EDINBURGH

Before deciding on the colour and shade of paint to be used in the repainting of the 240 ft. high Granton gasholder, Edinburgh Planning Committee are to consult the Royal Fine Arts Commission. The Engineer and Manager of the Gas Department reported to the committee last week that the original proposal by his Department had been that the holder be painted in a grey shade of graphite paint of high corrosion-resistance value. This shade had been acceptable as camouflage to the authorities during the war. The total cost of painting the holder would be about £9,000.

Grey was the colour selected as attracting least attention to the large structure, which was seen against a background of sky and water from most of the vantage points in Edinburgh. While it was agreed that grey was somewhat drab, there were several objections to the Town Planning Officer's proposal to paint the holder golden yellow. The additional cost would be less than £5,000.

Setting economic considerations aside, the Engineer and Manager was doubtful of the Town Planning Officer's contention that golden yellow would merge into the background. Paint consultants deemed golden yellow and orange to be warning colours in colour psychology, and were of opinion that the colour would concentrate attention on the holder rather than make it recede into the distance.

A sky-blue finish was suggested as an alternative to grey. In the view of the Engineer and Manager and that of painting authorities sky blue would be very much less conspicuous than golden yellow when viewed in sunlight against blue water or a blue sky. Painting of the holder was a matter of the greatest urgency, and serious corrosion would occur if it were not painted this summer.

The Town Planning Officer contended there was no possibility of camouflaging adequately such a large object without either putting it below the ground or in some way covering it with netting. His recommendation, therefore, was for the use of a cheerful and warm colour which would harmonise with the varying background. Golden yellow had reflective qualities which had the effect of diminishing the silhouette.

Having noted these conflicting views, the Committee is now awaiting a recommendation from the Fine Arts Commission.

MIDLAND ASSOCIATION OF GAS ENGINEERS AND MANAGERS

FOUR AREA BOARD CHAIRMEN AT ANNUAL MEETING

THE Annual General Meeting of the Midland Association of Gas Engineers and Managers was held at the Queen's Hotel, Birmingham, on Mar. 17. Mr. S. J. D. Williams (Stourbridge) presided prior to the installation of his successor, Mr. S. J. Sadler, Director, General Manager, and Secretary of the Solihull Gas Company. The business meeting was preceded by a luncheon which was made the occasion for welcoming Mr. E. Crowther, President of the Institution of Gas Engineers and Chairman of the Northern Gas Board; Mr. G. le B. Diamond, Chairman of the West Midlands Gas Board; Mr. H. F. H. Jones, Chairman of the East Midlands Gas Board; Mr. C. H. Chester, Vice-President of the Institution and Chairman of the South Western Gas Board; Mr. G. A. Matthews, Mr. Sydney Smith, and Mr. G. E. Currier, Deputy-Chairman of the West Midlands, East Midlands, and North Eastern Gas Boards respectively, and a number of other guests.

The **President,** in proposing the toast of the Institution of Gas Engineers, extended a special welcome to Mr. Crowther as the guest of honour. Founded in 1863 the Institution was incorporated by Royal Charter in 1929, and it was the latter that had done so much to improve the professional status of gas engineers generally. The educational standard required of corporate members was such as to compare with that of the other great engineering institutions. The work the Institution was doing to foster the education and training of young men to become gas engineers of an increasingly high standard was admirable, and this particularly applied to young men who had recently returned from the forces, who had a vast accumulation of knowledge of gas engineering and gas supply available to them.

Notwithstanding the fact that the gas industry was being nationalised it was essential that the Institution should remain an autonomous body and it would continue to have an important part to play in the exercise of professional, technical, and educational functions normally entrusted to it by its Royal Charter, and it must continue to serve as the focal point and provide a platform for free discussion of professional, technical, and educational matters, since it was vital that the search for and discussion of fundamental scientific truth should continue for the good of the community, unfettered by controls and restrictions. The Institution had long felt the need for its own headquarters and its own hall where it could hold its meetings, and they were pleased to observe that this was likely to become an accomplished fact in the near future. Such a movement was worthy of the support of them all.

A Closer Link

The Midland Association was proud of its connection with the parent Institution, and speaking generally its members were desirous of a still closer linking up, notwithstanding the many difficulties still to be overcome. At the meetings of the Institution, and particularly at the June meeting, where they were able to meet their brother engineers from long distances, one was struck by the fine way the organisation was conducted, not only by the President but by the Secretary, Dr. W. K. T. Braunholtz, and his staff. There was also the Benevolent Fund, which was doing much to ease the lot of the widows and families of brother gas engineers who were unable to make adequate provision for their dependents during their lifetime—a movement most worthy of their support. In coupling with the toast the name of Mr. Crowther, he said how pleased he was to congratulate him on his appointment as Chairman of the Northern Gas Board—an appointment as popular as it was well earned.

Mr. **E. Crowther,** President of the Institution of Gas Engineers, responding to the toast, said it was a great pleasure to meet one's old friends in districts from which one had departed for some time, and such gatherings symbolised that unity of aim and purpose which existed between the Associations in the districts and the Institution of Gas Engineers. It was especially pleasant to meet them in Birmingham when one recollected that Birmingham was the home of the two immediate past Presidents of the Institution, whose years of office were such outstandingly successful years that they would go down to history as among the most memorable in the annals of the Institution. The sympathy which existed between the District Associations and the Institution was a matter of common knowledge, and the President had been good enough to refer to some of the work which the Institution endeavoured to do for the industry. In particular he had mentioned education, but without the help of the District Associations and their Education Committees that work would be very limited in its scope and application. It was due to the sterling assistance which the Institution's Committees received from the parallel committees in the country that they had been able to build up what he believed it was proper to say was a very fine and very satisfactory system of education. He wished to acknowledge the debt which the Institution owed to the District Associations and their Education Committees for the manner in which they supported and helped and reinforced the work of the Institution in that matter.

A Matter for the Individual

It was possible that members of the Midland Association, like many of the members of the Council of the Institution, were of the opinion that in place of the link of affiliation between the District Associations and the Institution the time had come for a closer welding of their interests. The matter was in their own hands. The Institution had no desire to impose its views on any of the districts, but he would like them to know that the Institution held itself in readiness to co-operate in formulating a suitable instrument for that purpose, at their request. In the meantime the Institution was preoccupied to make it evident to all its members, in whatever category they might be, that it existed to served them individually, and it desired to encourage their participation to the fullest possible extent in all its activities. The *Bulletin* which had just been introduced was just one more proof of that close personal relationship that existed between the Institution and its members. They hoped that it was proving acceptable, but if the members had any suggestions to offer for its improvement he hoped they would not hesitate to let them have them. It was a new venture and like all new ventures it would, with their assistance, have plenty of scope for development.

He wished to refer to an innovation which it was proposed to introduce at the June meeting of the Institution. It was proposed to have a series of short papers on technical subjects which would take the place of a single major paper during their proceedings. The purpose in the minds of the Council in introducing the innovation was to afford a two-fold opportunity. On the one hand it would afford a greater number of members of the Institution, and perhaps some of the less senior members, an opportunity to take an active part in the proceedings at the annual general meeting; and on the other hand it would offer a means of publicising work of merit which was yet of too small a magnitude to be capable of forming the subject of a full length paper. He felt confident that the Midland District, with its tradition of engineering progress, could make some very useful contribution to that session, and he hoped that in the very near future they would begin to see some of those contributions coming forward. The Council attached a good deal of importance to the success of the innovation, but of course that success depended on the response which it attracted from the members, and he hoped that everyone in that district who could offer a contribution would not fail to do so. The success of the matter rested in the hands of the members and he would be surprised and disappointed if the Midland Association did not do its share towards the success of the innovation.

Duty and Integrity

The gas industry owed much of its vitality and progress to its voluntary professional organisations. In matters of education and research and the dissemination of technical knowledge it had at all times taken a lead, but he thought they would agree with him that the most valuable work which had been done had been the establishment of a standard of professional duty and integrity among its members which constituted the most valuable though intangible asset of the industry and was so material to its welfare. In the future those same duties and functions would assume an even greater importance than they had in the past, and on the professional organisation of the industry would depend the continued vitality and progress of the industry. As he saw the picture, the partnership, on the one hand, between the Gas Council and the Area Boards, and on the other hand between the professional provincial and central organisations of the industry, each working in its own sphere, would contribute to the development of an even greater gas industry which they all anticipated and in which they all believed. It was for each of them to resolve that so far as their particular sphere was concerned, they would not be lacking in bringing their particular contribution to that partnership.

Mr. **S. J. Sadler,** President-Elect, proposed the toast of the

guests, and said the Association was fortunate in having so many guests of distinction in the gas industry who had rendered, were rendering, and they sincerely hoped would continue to render, excellent service. Reference had already been made to the President of the Institution of Gas Engineers, and they were also particularly pleased to welcome Mr. Diamond, Chairman of the West Midlands Gas Board. He was President of the Southern Association in 1940, had served on many committees of the Institution and in fact practically throughout his life he had done yeoman service for the gas industry. He had been Regional Controller of the Ministry of Fuel and Power for the South Eastern Region. His (Mr. Sadler's) correspondence that morning had included a letter from the Industrial Gas Information Bureau with a reference to an enquiry from the Solihull Urban District Council regarding a crematorium, and enclosed with the letter was a copy of a paper on 'Gas in the Service of Cremation,' written by Mr. Diamond a few years ago. Mr. Diamond had come to the Midlands as a stranger, and it was their chief desire to give him every possible support; their team spirit would, it was hoped, enabled him to carry out his duties with the least possible trouble.

They were also pleased to welcome Mr. G. A. Matthews, Deputy Chairman of the West Midlands Board, who started work in the gasworks at Derby, and they congratulated him on his appointment as Deputy Chairman. Other notable guests were Mr. C. G. Spragg, member of the West Midlands Board; Mr S. V. Lancaster, Consultant Accountant; Mr. F. H. Cureton, Secretary; Mr. C. H. Chester, Chairman of the South Western Board and Vice-President of the Institution; Mr. G. E. Currier, Deputy-Chairman of the North Eastern Board; Mr. H. F. H. Jones, Chairman of the East Midlands Board; Mr. Sydney Smith, Deputy Chairman of the East Midlands Board; Mr. J. S. Smith, Assistant Secretary of the Ministry; Dr. W. T. K. Braunholtz, Secretary of the Institution, Mr. F. Allen, President of the Eastern Association of Gas Engineers and Managers; Mr. F. C. Gregory, Chairman of the Stourbridge Gas Committee, and Mr. Clifford A. King, Managing Director of the *Journal*.

Cordial Relations

Mr. **G. le B. Diamond,** responding, claimed that Mr. H. F. H. Jones and himself had some priority over the other guests in that they were the only Area Board Chairmen with 'Export' written across their backs. While they had been exports they were now imports and from his own point of view no import could have received a warmer welcome than he had received from his friends in the Midlands. The present was not a suitable occasion to talk about the doings of the West Midlands Gas Board in great detail, but he took the opportunity of thanking them for the co-operation he had received from the start. They were making solid progress. The members of the Association had been consulted from the moment the Board was constituted, and without exception they had accepted their advice and that of the Consultative Committee.

Having announced the appointment of the seven Divisional Managers, the Industrial Relations Officer and the Deputy Secretary (as reported on an earlier page of the *Journal*). Mr. Diamond said their great aim was to secure an easy transfer of the undertakings to the nationalised body on vesting date. They were not worried about the efficiency of the gas making process—they knew that the gas engineers were going to see to that side of the story—but they were concentrating on the financial and administrative aspects. They were weaving their web from the centre outwards, and would catch all the spiders later. The next most important matter for the West Midlands Board was the question of headquarters accommodation. They had had an anxious period and had seen innumerable premises, all unsuitable, in the course of their wanderings up to 15 to 20 miles around Birmingham, but he was not yet able to make an announcement in that respect.

THE ANNUAL BUSINESS MEETING

Presiding at the annual meeting, Mr. **Williams** referred with regret to the death during the past year of Lieut.-Colonel G. S. Eunson (Northampton), Mr. G. M. Gill (Cheltenham and Severn Valley) and Mr. R. J. Meiklejohn (Rugby).

The annual report and statement of accounts, which had been circulated to members, were approved and adopted without discussion.

On the proposition of Mr. **Sadler,** seconded by Mr. **Williams,** Mr. K. L. Pearce (Leicester) was unanimously elected Vice-President of the Association (to succeed to the Presidency in 1950). Mr. J. H. Wainwright (Halesowen) was unanimously re-elected Hon. Secretary and Treasurer, with hearty thanks for his past services. Mr. S. K. Hawthorne was elected a member of the Committee for two years; Mr. A. W. Elliott, Mr. C. R. Ingham, and Mr. W. McNaughton were elected for three years, and it was announced that Mr. T. F. E. Rhead became an ex-officio member as Chairman of the Universities Gas and Allied Industries Collaboration Committee. Mr. A. Allen and Mr. A. Tran were appointed Auditors.

As the result of a ballot the following new members were unanimously elected: R. R. H. Bursey (Leamington Priors), S. Dalby (Daventry), W. A. Pask (Leicester), J. T. Rees (Birmingham), A. Robinson (South Staffordshire Mond Gas Company), and J. B. Walsh (Leicester).

Mr. S. J. Sadler was appointed to serve as District Member of the Council of the Institution of Gas Engineers.

It was agreed to maintain the Association's contribution to the Benevolent Fund of the Institution at 100 guineas, and also to donate to the same fund a balance of £88 on the Association's purging machine account.

Mr. **C. F. W. Rendle,** as the District Representative of the Benevolent Fund, expressed appreciation of this continued generosity on the part of the Midland Association.

Mr. **E. Crowther,** President of the Institution, also expressed sincere thanks for the contribution. The Fund, he said, was administered to the great benefit of the recipients, and all contributions were welcome.

Messrs. C. F. W. Rendle, H. R. Hems, S. K. Hawthorne, and F. H. Bate were re-elected to serve on the Midland District Education Committee.

Work of the Education Committee

Mr. **H. R. Hems,** presenting a report on the work of the District Education Committee, paid tribute to the work done by Mr. E. T. Pickering, and said the Committee had met on two occasions during the year. The entries in the manufacture and supply classes were satisfactory, but while the examination results were equal to the average for the whole country they fell somewhat below the usual Midlands standard. Entrants from the last intensive course to be held in Birmingham secured good examination results, 81% having passed. Only one course was now running, namely, at Westminster. In view of the success of the intensive courses, the Institution Education Committee had considered the possibility of sponsoring a national full time course, but came to the conclusion that it would not be possible to do this for a number of years. At the request of the Midland District Education Committee, the Institution Education Committee had now agreed to reconsider the position, and the matter would be raised when the industry changed ownership. He emphasised the need for facilities for study within working hours.

For the first time since 1939 so far as Birmingham was concerned, all gas classes were being held, and there were particularly strong classes in the Higher Grade Courses. Educational affairs, like others in the industry at the present time, were in a state of flux. Next year would see the last of the Ordinary Grade Engineering classes, with the Higher Grade to follow two years afterwards. The first students taking the City and Guilds courses were now in their second year on ancillary subjects and arrangements were now being made for the provision of main subject classes at colleges next session. This would call for additional classroom accommodation at the colleges, and for more teachers. At the request of the District Education Committee enquiries had been made of 50 Midland undertakings as to the possible number of entrants for these courses. As only 20 replies had been received their information was not as complete as could be wished, but it was obvious from the returns that the courses would on the whole secure reasonable support. The number of entrants from Birmingham, particularly on the manufacturing side, was very good.

Regarding the Associate Membership examination many students would prefer to proceed via the Higher National Certificate. The Institution Education Committee had recently given careful consideration to the details of a curriculum which would assist principals of colleges and others in arranging suitable courses. As would be seen from announcements in the Press, progress was being made on the educational side with such matters as text books and film strips, and the Institution was arranging a full programme to include an educational conference and a short course for teachers in 1949. The District Education Committee would wish him to thank the engineers and managers who had allowed students time off to attend day classes and had given their encouragement to principals of colleges and co-operated in the operation of the scheme; and also the teachers, without whose whole-hearted effort all such schemes would fall to the ground.

The New President

Mr. **Williams** then inducted Mr. S. J. Sadler as the new President. Mr. Sadler had, he said, been a member since 1922 and from 1932 to 1935 he was the Secretary of the Association. The members had made a happy choice, and he could not do more than wish Mr. Sadler every happiness in his Presidential year.

Mr. **Sadler,** in taking the chair, said he would endeavour to carry out the duties of the office with dignity and in accordance with the high traditions of the Association. His first duty as President was to express appreciation of the services rendered during the past year by Mr. Williams. He had filled the office of President in a gracious and most efficient manner. Well known as a man of retiring disposition, he had done splendid work for the Association, and on their behalf he had attended the meetings

of many of the other District Associations and had taken a keen interest in the Juniors.

The **President** then invested his immediate predecessor with the Past President's medal. Owing to war conditions such decorations had been unobtainable for some time and he therefore had the unique distinction of presenting three others—to Mr. G. P. Mitchell, Mr. A. B. Britton, and Mr. T. F. E. Rhead respectively. There was also a Past President's medal for Mr. P. Dougall, but he was not present to receive it.

Mr. **Sadler** then presented his Presidential Address, as reported in page 643 of this issue.

The **Secretary** announced that the President of the Institution, who had had to leave before the end of the address, had left a note of his congratulations on a most able address and his wishes for a successful year.

Mr. **J. E. Wakeford** (Coventry) moved, and Mr. **A. B. Britton** (Hinckley) seconded a vote of thanks to the President for his address, to which Mr. Sadler briefly responded.

One Voice Throughout the Country

Mr. **C. H. Chester,** Vice-President of the Institution of Gas Engineers, said the way in which the President had skated over many difficulties with tact and discretion encouraged him to think that he would not tread on many people's corns in the West Midlands Board. He did not know the exact extent of his own association with the Midlands, but it was a pleasure to come and support Mr. Sadler on that occasion. He hoped those pleasant associations would be pursued and even encouraged under the new regime. He was pleased to know that they were giving consideration to the question of becoming a district section of the Institution. In the absence of Mr. Crowther he hesitated to say much about the matter, but he was firmly of the opinion that the Institution and the professional engineers of the future must get together and speak with one voice throughout the whole country. Engineering was likely to be developed with greater intensity under the new regime, in the sense that while administration was rationalised the engineer would have the arduous and onerous task of doing the job on the spot. As engineers they must preserve a forum in which they could discuss freely and openly the problems that were bound to arise from time to time—a forum without control from the Area Board. The Institution would welcome most heartily the formation of district sections. He had no axe to grind, but he assured them that if they felt they would like to see the formation of district sections the Institution would devise means by which they could bring into the district sections the members of such an association as theirs.

Mr. **G. A. Matthews,** Deputy Chairman of the West Midlands Gas Board, assured the members that many of the things mentioned by Mr. Sadler in his Presidential Address were already receiving the serious attention of the Board, particularly on the technical side. With regard to the disposal of liquor effluent, one of the things that the Board would have to face sooner or later was a considerable expenditure in dealing with that urgent problem. The Board held the Institution in high regard and he thought it was also their intention to maintain and continue those great voluntary associations which had rendered so much assistance to the gas industry in the past. One of their greatest regrets was to see the passing of so much of the voluntary work that had been done by the old guard in the industry. It was the Board's intention to run the area not as a bureaucracy, but with the greatest possible degree of personal co-operation.

Mr. **G. E. Currier,** Deputy Chairman of the North Eastern Gas Board, also paid tribute to the excellence of Mr. Sadler's address and expressed his pleasure at being back in the Midlands which provided him with many pleasant memories.

The meeting closed with the announcement by Mr. **Sadler** that the summer meeting would take the form of a visit to Solihull on May 26.

S.B.G.I. GOLFING CIRCLE

The Society of British Gas Industries Golfing Circle will hold its Summer Meeting at the Richmond Golf Club, Sunbrook Park, Surrey, on Monday, June 13, and cordially invite golfing members of the Institution of Gas Engineers to attend and compete for the Coronation Plate which was originally presented by the S.B.G.I. Golfing Circle to the I.G.E. to commemorate the coronation of George VI. Members of the S.B.G.I. Golfing Circle will play for the Thornton Victory Cup. Entry forms will be sent to all I.G.E. members, by courtesy of the I.G.E., with the normal papers relating to the annual meeting.

The Commercial Gas Company has announced that the price of gas will be reduced by 1d. per therm, from 18d. to 17d., as from Mar. 16. A proportion of this decrease will be made in the price charged to discount and special contract consumers. A permit authorising the reduction has been granted by the Ministry of Fuel and Power.

INSTITUTION EDUCATION SCHEME

Supplementary List of Examination Results, 1948

INTERNAL CANDIDATES (20).

Higher Grade Certificate in Gas Engineering (Manufacture) (11).

Class	Name	Centre
First*	Connor, D. H.	Westminster
,,	Cox, D.	Westminster
,,	Jenkins, D.	Westminster
Second	Barker, D. S.	Westminster
,,	Barton, S.	Brighton
,,	Farmer, G. C.	Westminster
,,	Heath, D. J.	Brighton
,,	Hirst, C. H.	Brighton
,,	Preston, A. G.	Westminster
,,	Twomlow, W. H.	Westminster
,,	Wood, M. S.	Birmingham

* Denotes First Class Pass with Distinction in the main subject.

Higher Grade Certificate in Gas Engineering (Supply) (9).

Class	Name	Centre
First	Coull, W.	Birmingham
Second	Akers, E.	Westminster
,,	Clark, R. W.	Westminster
,,	Davison, A. F. J.	Westminster
,,	Evans, J. C.	Westminster
,,	Jones, W.	Westminster
,,	Jordan, D. V.	Birmingham
,,	Ricketts, A. J.	Westminster
,,	Todd, T. B.	Westminster

NEW SHOWROOMS AT ST. LEONARDS

Transferred from London Road to 18, Marine Court, the Hastings and St. Leonards Gas Company's new St. Leonards branch showroom is an attractive development that does great credit not only to the Company but to the town. The neat modern display window arrests the attention of all passers-by, and the interior is a model of what architectural skill and a well-devised decoration scheme can achieve in the limits of an oblong shop space. Cream walls, with a recessed panel of pale blue, woodwork in silky, straight-grained walnut, plastic shelf and table surfaces, and flooring in a pleasing, mottled plastic material combine with tasteful

furniture to make a pleasing setting for the modern gas appliances which are on show.

Mirrors add cheerfulness and a sense of greater space, and photographic wall panels give agreeable glimpses of the domestic uses of gas.

An interesting technical point is that owing to the absence of brick flues throughout the building (which is a 12 storey block of flats on the sea front) ventilation of the products of combustion from the various appliances had to be obtained by means of a motor driven extract fan. As a safety precaution against electricity failure causing the fan to shut down, a solenoid operated gas valve was inserted in the main gas line and, as a further precaution against re-starting the ventilating fan before the appliance taps were closed, pressure cut off valves were inserted in the individual supplies to the apparatus.

The architect of this clever example of commercial construction and design is Mr. J. C. E. Fortey, of Bratt Colbran, Ltd., and the work was carried out by Llewellyns (Hastings), Ltd. Appreciation of the good work of the architect and builders was expressed by Mr. J. H. Hornby (Engineer and General Manager of the Gas Company) at a small luncheon party at the Royal Victoria Hotel. Among those present were Mr. H. A. Probin, General Manager, South Eastern Gas Corporation, and Mr. J. L. Stokes, Distribution and Sales Superintendent, Hastings and St. Leonards Gas Company.

THE OLD ORDER AND THE NEW*

By S. J. SADLER,

Director, General Manager, and Secretary, Solihull Gas Company

I AM grateful to the members of the Midland Association for electing me to the Presidency of this very live Association of Gas Engineers and Managers, and I appreciate the goodwill of the members in so doing. I am deeply conscious of the responsibility devolving upon me as your President in this difficult year of transition from private and municipal ownership to State ownership, a subject very much in the minds of all throughout the gas industry. This Association, in common with others, and especially the Institution of Gas Engineers, must be particularly careful to keep in contact and in step with all the developments which will necessarily follow such a material change in the structure and management of the industry.

Gas engineers and managers, as members of a very old public utility industry, have become imbued through the generations with the necessity of giving public service, and we must see that nothing is done which would jeopardise that service, a service which in the past has been individual and local, but which will now be carried out by 12 Area Boards. These boards will, of course, have to employ engineers and good local executives of sufficient status that they will be the figures in the locality to who the public may look for disinterested personal service. I think we can justifiably hope that these boards will continue to encourage the interchange of technical opinion within areas such as this Association will cover, and between areas where associations overlap, and, more especially, through the Institution of Gas Engineers. The necessity of having available a free platform for such a large national industry which is inherently technical in its basis must be fostered, for obviously in the interchange of views and knowledge many difficulties will be avoided or more easily overcome.

Development of Fuel Policy

Much of the commercial policy previously considered by our Association will be dealt with by the Area Boards, but the methods by which good results have been obtained in the past should still be subjects for discussion by our Association. We can expect over the ensuing few years a development of a national fuel policy on a rational basis, since the main fuel industries are now all nationalised, and the Government must assuredly become increasingly conscious of the necessity of obtaining and using coal in its most efficient and logical channels, and by this I mean the types of coal produced and used, as well as those bought and consumed by other industrial and domestic markets. It may be that new processes will have to be developed to meet changing fuel markets. The economics of fuel are essentially part of the real economic basis of national prosperity.

The history of our Association is coincident with the history of the gas industry. We have been in existence for upwards of 70 years and we should be wanting if we did not record our gratitude to those of our members who in the past and the present have voluntarily given of their services to the development of the gas industry, and generally guided our deliberations in the collective interests of the important service we provide.

This brings me to an important point now in the minds of all District Associations and the Institution of Gas Engineers. Our Institution has, under its Charter, very strict rules of entry and is charged with many professional, technical, and research duties. Overall, it has improved the status of the gas engineer so that he has at last fully received the public recognition which is his right. The Institution has also developed a first-class education scheme for the benefit of new entrants to the industry. Sir Frederick J. West, in his Presidential Address to the Institution in 1942, said: 'In these days, when it is more than ever necessary that the industry should speak with one voice rather than in disconnected units, it is essential that the relations between the parent body and the affiliated District Gas Associations should be the closest possible.' Those words were never more true than at the present time.

While this Association, and others, are affiliated to the Institution of Gas Engineers, I am firmly of the opinion that this connection with the Institution must be on closer lines, and we must keep in step with progress by eventually becoming or constituting district sections of the Institution, as is the case with most other Chartered bodies. Mr. H. J. Escreet dealt at some length with this question in his Presidential Address to the Southern Association in 1947.

Unless District Associations such as ours get together and become district sections of the Institution, all professional bodies in the industry will gradually become very weak. I hope, therefore, that our members will give serious thought to this problem, a somewhat urgent problem in my view, and assist in bringing about such a district section organisation rather than affiliated bodies, which often lack cohesion and do not make for united action. This must result in further improving the status of the Institution, and additionally in advancing the position of its professional members. We may properly expect the Institution to consider and provide means whereby present members of District Associations can remain members of their district sections, and initiate legislation to elect individuals in the gas industry with special qualifications and abilities, and persons of proved ability in allied fields, such as the manufacture and sale of gas appliances and associated trades, to become members. No doubt, at least we hope there need be no doubt, we can expect the Ministry of Fuel and Power, the Gas Council, and Area Boards to consult the Institution of Gas Engineers, as the professional and technical body under Royal Charter, for advice on many matters, and we should, therefore, waste no time in proceeding with negotiations to the end that I have suggested.

We are all naturally proud of our Association, and, therefore, we shall be jealous of preserving traditions, and possibly maintaining treasured names, but these are small difficulties compared with the larger picture we must now envisage. Should district sections of the Institution be formed, no doubt Area Boards could, and would, similarly support and consult them to their advantage, for it must be remembered that the function of Area Boards is not only to administer the national set-up in their areas, but to keep in touch with the needs of the areas. It may therefore be that my successor in due time will not be known as the President of the Midland Association of Gas Engineers and Managers, but will be the Chairman of the Midland Section of the Institution of Gas Engineers, incorporating the Midland Association of Gas Engineers and Managers.

An Early Decision

I shall take a great interest in the discussions with the Institution, and I hope that rules and by-laws may be accepted which can be submitted to our members as soon as the negotiating powers have arrived at a common basis, and this may mean the calling of a special general meeting very shortly for the consideration of any proposals. I appeal to members to give me their support, which I am sure will be for the benefit of the gas industry under nationalisation.

In the past, District Associations have had much cause to thank public and private boards of directors for financial and other support, and I feel this is an appropriate time to pay tribute to directors of gas companies and committees of municipal undertakings for the part they have taken in laying the foundations of and building up a strong and reliable gas industry. I have been fortunate in having a board of directors who have been anxious to respond to progressive enterprise, and during the 27½ years I have been at Solihull the make has grown 900%. During that time, not a year has passed without additions or alterations being carried out to the works and district. This could not have been possible without the fullest support and encouragement of my board, and today, when you have done me the honour of electing me to the Presidency, I feel this is a tribute which does them honour too.

At such moments, one dwells a little on what has been done, and today, as I think of how the undertaking for which I have been responsible has had to develop to meet the needs of the area, I am almost staggered by the changes that the years have brought. The population of the Solihull area in 1921 was 21,034; during the 11 years to 1932 it grew by 4,000 to 25,373; but in the

* Presidential Address to the Midland Association of Gas Engineers and Managers March 17, 1949

17 years to 1949 it has shot up to 66,514. The prophets, in this case the Abercombie and Jackson reports, forecast that by 1962 the population may be 110,000, which is approximately 65.4% increase over the present figure. In such a forecast as this, we may be sure there will lie sufficient problems for the gas engineers of the future. In this connection, my board have had the foresight to purchase land, which, in my opinion, should be sufficient to meet possible future extensions.

Let us take stock of ourselves. The gas engineer is just as much a worker as the stoker in the gasworks, and he is, therefore, entitled to have proper consideration in the matter of salaries and terms and conditions of employment appropriate to his position. I hope that facilities for meeting for the ultimate good of the industry, and the engineer within it, will always be preserved and further developed.

Closer Interest in Juniors

There is undoubtedly less technical ability coming into the industry, and the inducements offered must therefore be improved in order to attract the right type of junior, while the educational opportunities available, once a man has entered into employment with us, must be developed to the full, for our future success depends on the maintenance of the proper standard of personnel. For this reason I suggest that if district sections are formed, we must take a closer interest in the juniors by having student sections fostered in other ways than the presentation of papers and works visits. For example, our juniors could be given facilities to attend technical colleges and universities, and changes of employment within areas must be brought about as an important part of their professional training. District sections of the Institution could no doubt do this work on behalf of the Area Boards, and I would urge careful consideration of this suggestion.

I would appeal for more general support of the Benevolent Fund of the Institution, and for a larger number of subscriptions to the new building fund. If we are proud of our Institutions, as we ought to be, then these two objects should receive our earnest and continued consideration.

The Midland area has undergone quite a large amount of integration over the years, and is an almost ideal geographical region for still further co-operation and interlinking between undertakings, which in future will not present negotiating difficulties between company and municipal undertakings as may sometimes have occurred in the past. An Area Board will no doubt not necessarily consider just the production of gas for a specific area, but the economics of interlinking, and also the important matter of coal selection and the preparation and treatment of our many by-products. Careful research will be necessary, and some time must pass before the results of such research can be translated into change or variation in established practice. We, as gas engineers, must be thinking on broader and more modern lines to meet the operating of the industry as it now is, and not as individual units providing a service for nicely classified geographical areas.

The need for organised, co-operative and specialised effort is greater today than ever before, not only within the gas industry, but with kindred industries such as coal, tar, benzole, and coke, as well as those manufacturing plants making appliances for the consumption of our products.

The Town and Country Planning Act will have some influence on gasworks development, and quite properly, we shall have to look to the design and architecture of our buildings and plant, the cleanliness of the works, which is important from all points of view, and to improve materially the atmosphere and lay-out of the works in general and the conditions under which we all work. It may well be that ten or 20 years from now there will be artists as well as architects attached to the planning department of the Gas Council. A voter may ask 'Why cannot my gasworks be beautiful?'

Coal Problems

Despite the efforts of the Coal Board, there is still a shortage of gas making coals of certain sizes, with the result that coal is being diverted from the home market. Since the advent of the continuous vertical retort, the demand for washed sized coals has increased beyond the supply. With the existing shortage of this type of coal, and the demands for export, it is inevitable that unless there is a marked change in the output of the coal industry, we shall be called on to carbonise inferior coals. By 'inferior,' I mean coking coals with a lower gas yield and probably a higher ash content than we would like. In such an event, perhaps the types of carbonising plant to be installed will be to a greater degree controlled by the coals available, and to this end careful consideration will have to be given so as not to impair present works efficiencies and standards of output which have been built up over lengthy periods and have gained the confidence and satisfaction of our consumers. It would be a fallacy to contaminate already washed and sized coals by mixing with them ungraded fuel of high ash content. We, in the gas industry, have always prided ourselves that we have tackled our problems with energy and foresight, and usually with success.

Liquor Disposal

There is one outstanding problem which has not had all the attention it ought to have had, and that is the question of effluent disposal. Only in some cases has it been treated with the seriousness it deserves, and in most of these cases, only because it was absolutely necessary. The rest of us failed to see the writing on the wall, and the result is that to-day a number of undertakings are in a difficult position through having their contracts with sewerage authorities or chemical manufacturers restricted and, in some cases, even cancelled.

The general attitude to the problem has been: 'Why should I worry? I'm managing to get rid of it, and how, doesn't matter.' The pity of it all is that a great deal of work has been done by the Institution of Gas Engineers in the matter, and if only the industry as a whole had realised how necessary it was to take warning from the few wise men, and to take advantage of the work they had done, in order to prepare for the inevitable future, we should not be in the position in which we find ourselves to-day. Now that the gas industry is about to become nationalised, and the provisions of the Public Health (Drainage of Trade Premises) Act, 1937, are beginning to be enforced, it appears that a national approach to this problem will be forced upon us.

It may be that in the future it will be compulsory to treat effluent before discharging into sewers and all works will have to make provision themselves for liquor treatment to a degree suitable to the particular conditions existing at their local sewerage works. It is incumbent on all of us to preserve the purity of the nation's water supply, and this necessity will in the near future be forced on us by various bodies set up under new legislation.

We have been proud in the past, and I am sure we are to-day, to be able to boast that our industry supplies gas to 11-12 mill. consumers. I am tempted to ask: 'What are these consumers expecting of the industry in the future?' We have built up a goodwill second to none in the supply and service we give, and this has been achieved principally by a personal contact as between the undertaking's representative and the consumer. Such goodwill is of inestimable value, and is the root of all progress. It is to be hoped that this relationship with consumers will be allowed to continue, and even grow, to the benefit of all concerned.

We shall in all probability be faced with keener competition in the future than we have had to meet in the past, and we must see that we are not lacking in vigorously putting over the case for gas. In the days ahead it will be necessary to have more and better trained personnel to deal with consumers, and it is up to us to take care of training this type of employee with just as much vigour as we give to finding and developing the men who become our works executives. For many years efforts have been made to establish some form of approval of domestic appliances so that we can offer to our consumers goods with a guarantee of reliability and hallmark of efficiency. This will be one of the benefits which the Area Boards will establish.

One often hears that under nationalisation, the man in the street expects a standard price of gas. Whether this will ever be possible with all the intricacies it involves is a very complex problem, but the thought does prompt the suggestion that a start might be made in adopting a standard price for all types of appliances, including standard hire and hire purchase terms. This would be of considerable benefit to the industry especially in congested areas where a consumer sees similar appliances in, say, two showrooms at different prices.

The accountancy side of a gas company, and the manner in which the accounts are prepared, are prescribed by section 15 of the Gas Regulation Act, 1920, which authorised the Board of Trade to prescribe the form of the annual accounts. No form was however prescribed. No doubt there were many problems which were not overcome relating to standardisation of accounts in the earlier years, and it will be interesting to see whether it will be possible for a standard form to be prepared under nationalisation, or whether the present form will be continued to enable the Area Board to compare the trading results under nationalisation with that operating at the present moment.

In conclusion, I feel I have only touched the merest fringe of the many points I might have made in this address, but I have been unwilling to weary you with the thoughts which at this time are probably common to most of us. So I conclude with a personal appeal to all to give to the Area Board both individually, and as members of a team, no matter what one's personal views may be, every possible help to make the future of our industry, of which we are all so proud, a future in which it can fulfil the rich and glorious possibilities which the pioneers of the past in moments of vision have seen for it, and towards the attainment of which so many of us have laboured long and hard. Only by so doing can we pass on the baton to our younger colleagues.

Mention is Made in the Journal 'Diary' on another page of a meeting of the Central Board of the British Gas Council, to be held on April 12. In sending us notice of this meeting, Mr. T. B. Scott, Secretary of the B.G.C., points out that this will be the last of such meetings, as vesting date is May 1.

ECONOMICS OF GAS WASHING

EXPERIMENTAL CALCULATIONS*

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A SHORT time ago the writer was preparing some notes on the arrangement and design of ammonia washers to suit varying conditions of gas manufacture, and made an observation, relating particularly to static washers, that the number of bays was usually in the region of eight to 12 for an ordinary ammonia washing operation. He also had in mind a suggestion which arose during the discussion of a paper on purification and by-product plant to the 1948 annual general meeting of the Institution of Gas Engineers, wherein it was suggested that some degree of standardisation was advisable in condensing plant, washing plant, &c., for the more economic production of auxiliary plant of this character.

At this point it appeared appropriate to examine primarily the cost of ammonia washing, taking into account as many factors as possible, and the first conclusions were somewhat different from what had been expected. In an endeavour to find out whether the same conclusions applied to other washing operations, another analysis was made of the problem of naphthalene removal, and still another on benzole recovery. Whether the conclusions do in fact suggest that standardisation is feasible will require much more consideration, but it is thought that the results of these analyses might be of interest to purchasers of by-product recovery plants of these kinds.

Ammonia Removal

This is probably the most simple of the three washing operations brought under review. The estimates were carried out in the following way.

All the cases considered relate to a stream of gas of 6 mill. cu.ft. per day, which is reasonably representative. The importance of capital cost and of power will naturally be greater in apparatus on a smaller scale than this, and less on a larger scale, but the number of cases of streams of more than 6 mill. in a single washer is comparatively small.

A given washing operation can be undertaken with a washer of any number of bays from, say, two upward, the user being obliged to employ more water in order to make washing effective with a smaller number of bays. What is the effect on the annual cost of increasing the water and therefore the total amount of liquor produced in the works? The answer to this cannot be found unless the destination of the liquor is known. In one case, it may be distilled into concentrated ammonia liquor on the works at a comparatively modest cost, and in the other extreme case, circumstances may dictate that the whole of the weak liquor must be carried away from the site, which is a comparatively expensive undertaking in some instances. The question is, is the cost of the disposal of the liquor a measurable item as against the capital cost? It will be seen that the cost of disposal goes a long way to assist in prescribing the most economical size of washer and therefore the most economical rate of water addition.

It is necessary, of course, to keep in mind that on any gas stream there is a quantity of virgin liquor to be dealt with which is usually large in proportion to the amount of washer liquor, so that extending the quantity of the latter does not usually create any great problem. It is, in fact, largely a question of assessing the cost of the increased quantity of water rather than that of the whole quantity of water.

It has also been considered advisable to charge the cost of clean water to the washer itself, at a rate approximating to that of town water supply, as a reasonably good water supply is well worth while for this purpose.

No estimates have been made to cover cases where stripped weak liquor is employed as the washing liquid. It is obvious, of course, that if this liquor has been stripped in an outside distilling installation, the total quantity of liquor proceeding from the gas washer to the distilling plant is the same in either case. It is only where liquor is taken for washing purposes without such outside stripping that true economy is realised in this direction.

Two main cases are examined, one giving a general relationship covering gases with comparatively low ammonia content and high CO_2, such as in the majority of vertical retort gasworks, and the other representing roughly the case of horizontal retort or coke oven installations, where the ammonia is high and the CO_2 comparatively low. The assumed figures in these two cases are that 100 gr. NH_3 per cu.ft. requires to be reduced to 6 gr. in the first case, and 200 gr. requires to be reduced to 6 gr. in the second. The operating temperature was assumed to be normally about 70° F.

Clearly the possible variables are great in number, and it would hardly be feasible to examine every possible case in detail. What can be done, however, is to examine each new case as it arises, with particular reference to the considerations which affect the ultimate economics of the process.

In Fig. 1, against the values of n (n being the number of bays in a washer of a bay capacity normally assigned to a 6 mill. cu.ft. gas stream) are set out the annual costs of providing and driving the washer, plus various rates of disposal of the washer liquor when treating vertical retort gas. The cost of disposal of the virgin liquor is not considered at all, as it is assumed to be a constant amount, and what we are seeking is a minimum annual cost of recovering the ammonia remaining in the gas.

The total capital and maintenance charges are assessed at 10%, power at 1d. per kWh, clean water at 1s. per 1,000 gall., and the cost of disposal at five different rates varying from nil to 10s. per ton of water.

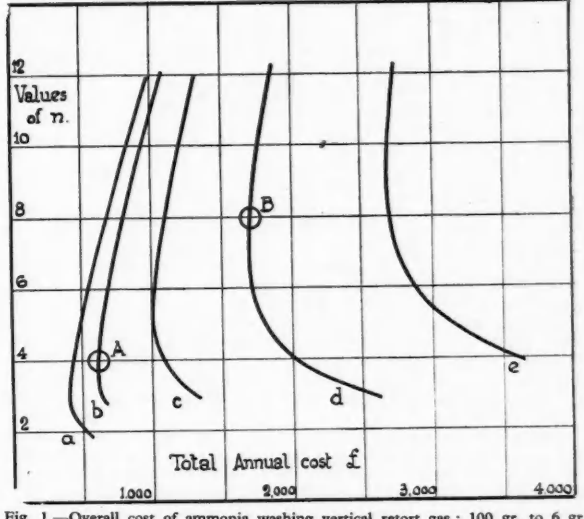


Fig. 1.—Overall cost of ammonia washing vertical retort gas : 100 gr. to 6 gr. Annual cost for various values of n, including :
Capital and maintenance at 10%.
Power at 1d./kWh.
Water at 1s./1,000 gall.
Distillation or handling cost.
Costs of disposal :
(*a*) Nil.
(*b*) 6d./ton.
(*c*) 2s./ton.
(*d*) 5s./ton.
(*e*) 10s./ton.

The selection of these costs of disposal is somewhat arbitrary, but they might, for example, be considered as covering the following specific cases :

(a) Sale to a distiller who pays only cost of transport.
(b) Effecting the distillation to concentrated liquor, using exhaust or waste heat steam.
(c) Distillation as in (b), but employing steam at 4s. per 1,000 lb. or carriage at equal total cost.
(d) Road or rail carriage, 10 to 15 miles.
(e) Road or rail carriage, 30 to 40 miles.

*The symbols for the characteristics of sectional washers are those employed in the papers by Ho'lings and Silver presented to the Institution of Chemical Engineers, January, 1934 (*Gas Journal*, Vol. 205, 307, 372).

An inspection of the curves will reveal the fact that the economic minimum number of bays for these five cases is 3, 4, 5, 7, and 9 respectively. It might be interesting to note that the values of qk for these values of n are approximately as follows:—2.6, 1.9, 1.6, 1.3, and 1.15 respectively These figures represent the relative volumes of water required to carry out the washing operation with this supposedly standard unit of washer bay as the numbers of bays are increased or diminished. Naturally, this can only be checked if the characteristics of the washer are known, and for this purpose a bay efficiency has been used of 0.9.

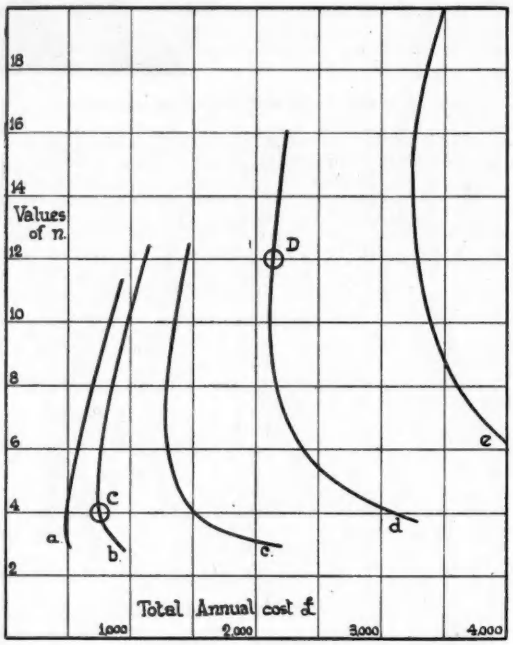


Fig. 2.—Overall cost of ammonia washing horizontal retort gas : 200 gr. to 6 gr. Annual cost for various values of n, including :
Capital and maintenance at 10%.
Power at 1d./kWh.
Water at 1s./1,000 gall.
Distillation or handling cost.

Costs of disposal :
(*a*) Nil.
(*b*) 6d./ton.
(*c*) 2s./ton.
(*d*) 5s./ton.
(*e*) 10s./ton.

There is, therefore, a case for employing more washing liquid where the means of disposal are anything but the most expensive, and cutting down the number of bays actually employed in the washing, so as to economise power. In the selection of a new washer, the number would therefore be proportioned to the expected cost of disposal in this way.

A practical application of the conclusions stated would be that where a washer has been built with, say, eight bays, but constructed in two units in series, over the greater part of the year it should not be necessary to work more than one half the machine, the power being saved on the other half, with an overall economy in use.

Similar conclusions are arrived at from Fig. 2, which shows the corresponding figures for a horizontal retort gas, with an input of 200 gr. It will be seen that only where the cost of disposal is particularly high, is there much justification for using washers of more than six operating bays.

It may be of interest to state the relative values of the items making up the total cost, for the four points (A) (B) (on Fig. 1) and (C) (D) (on Fig. 2). These are set out in the accompanying Table I.

TABLE I.

	A	B	C	D
	£	£	£	£
Capital and maintenance...	300	500	300	700
Power	80	161	80	242
Water	70	44	115	50
Steam or carriage... ...	154	995	253	1,145
	£604	£1,700	£748	£2,137

It will be noted from these four sample cases that (A) and (C) are using the most water for the washing operation, as measured by the cost of the water supply and the cost of disposal of the liquor, but that the washers are the smallest. In the cases of (B) and (D), the cost of disposal is so great that additional capital charge on the washer justifies itself, by avoiding still heavier increases in cost of disposal.

A broad conclusion is that economy lies in the direction of employing the washer with the smallest number of operating sections, even though this should involve making the individual sections of greater size than would be considered normally necessary.

Variations in the Basic Terms

What variations in the terms assumed can be imagined, and what would be their effects on the points where the minimum costs would occur ?

1. Cheaper plant, lower capital cost, and cheaper power would justify using slightly larger washers, but would be unlikely to bring the economic minimum into the region of eight bays for any case now reckoned as requiring, say, three to five bays.
2. Cheaper water, as with cheaper disposal, would justify using more water and place the minimum at *less* numbers of bays.
3. Lower temperatures of operation than 70° and more effective plants (e.g., cleaner fillings resulting from cleaner gas) would keep the minimum in the lower region.

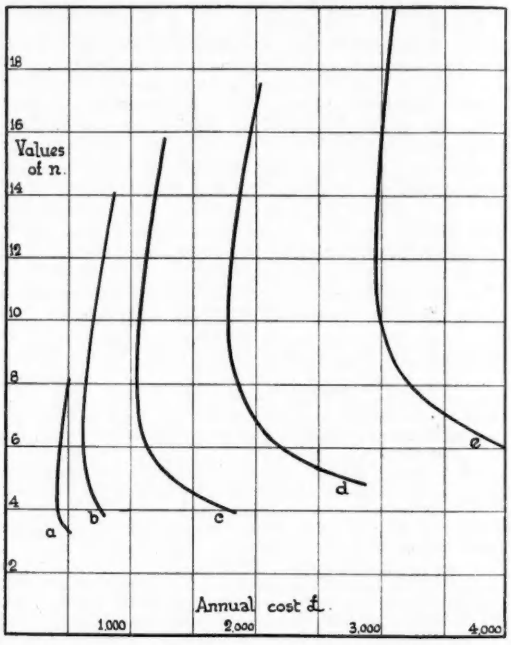


Fig. 3.—Vertical retort gas : 100 gr. to 6 gr. (Series 2.)

A complete re-assessment of the whole problem on the basis of an assembly of bay units of smaller size (about one half of the surface of contact of that employed for Figs. 1 and 2) is given in Figs. 3 and 4. There is, as might be expected, a demonstration that more units are required, the minimum n values being now 5, 6, 8, 10, 12, as against 3, 4, 5, 7, 9 for vertical retort conditions, and 6, 7, 10, 11, 15 against 4, 5, 7, 10, 15.

A more interesting result is that the total cost at the optimum value of n is practically the same for either piece of apparatus. This is clearly seen in Table II.

TABLE II.

Comparison of Minimum Costs.

VERTICAL RETORT GAS.

	Larger washers (Fig. 1)			Smaller washers (Fig. 4)	
	n	qk	Cost £	qk	Cost £
(*a*)	3	2.8	400	2.3	410
(*b*)	4	1.95	610	1.77	620
(*c*)	5	1.59	1,000	1.35	1,050
(*d*)	7	1.30	1,700	1.22	1,770
(*e*)	9	1.17	2,675	1.13	2,950

HORIZONTAL RETORT GAS.

	Larger washers (Fig. 2)			Smaller washers (Fig. 3)	
	n	qk	Cost £	qk	Cost £
(*a*)	4	2.6	480	2.48	470
(*b*)	5	2.03	740	2.02	700
(*c*)	7	1.52	1,275	1.50	1,210
(*d*)	10	1.27	2,100	1.42	2,050
(*e*)	15	1.13	3,230	1.23	3,380

The close approximation is notable. It is not, as a matter of fact, fortuitous. It appears again in the corresponding calculations relating to benzole and naphthalene recovery. It means that

if a certain result can be obtained alternatively by the use of few large effects or of many small effects, the economy of building in fewer parts is balanced fairly closely by the economy obtained in the greater number of smaller effects, by the total reduction in surface provided. The fact also appears that, in most cases, differences which might appear in Table II are small in comparison to the costs of disposal of the product.

It is to be assumed, of course, that the two sizes of washers have proportions consistent with each other (*e.g.*, in the allowance for overhead circulation and therefore also in the power consumed).

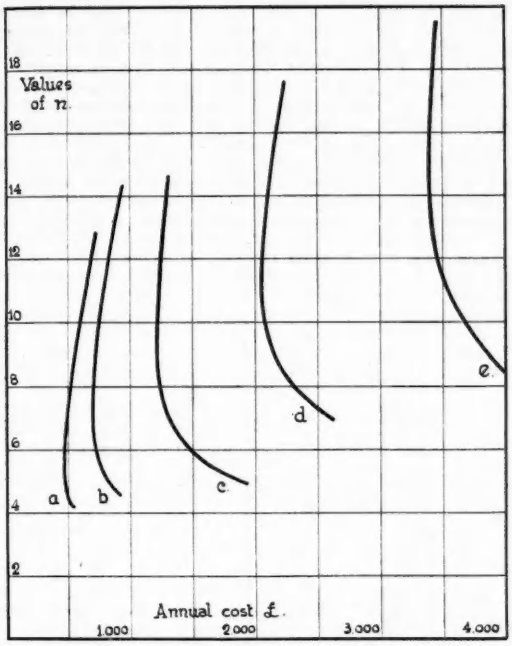


Fig. 4.—Horizontal retort gas : 200 gr. to 6 gr. (Series 2.)

It may be expected that a similar relationship would be found in designs of washing plant other than those the writer has examined, but the exact minimum point would probably vary somewhat. Some minor irregularities in this table arise from the fact that the values of n selected are mostly the whole numbers next above the minima shown by the curves. This is only a matter of realism.

Other Conclusions

A practical point of more than casual interest can be illustrated from comparisons of the conditions of performance of similar washers with small numbers of sections and large flow of liquid, as against washers with large numbers and reduced liquid flow.

Let us take two cases from the ammonia washers just considered. The performance 100 gr. to 6 gr. can be attained by any of these washers.

1. Size 0.9 : n = 4 qk = 2.0 kq^1 = 20. Slip 6%.
2. Size 0.9 : n = 12 qk = 1.1 kq^1 = 20. Slip 6%.
3. Size 0.7 : n = 6 qk = 1.8 kq^1 = 15. Slip 6%.
4. Size 0.7 : n = 12 qk = 1.15 kq^1 = 15. Slip 6%.

Now let us imagine that this washer goes out of tune by reason of a reduction in qk in the ratio 1.0 to 0.7. For example, this result would arise if the temperature rose by 5° F., if the water feed were not adjusted. The effects are set out below.

1. qk = 1.4. Slip = 12%.
2. qk = 0.77. Slip = 24%.
3. qk = 1.26. Slip = 13.5%.
4. qk = 0.805. Slip = 21%.

Clearly the fact of working near to the critical value qk = 1 in cases 2 and 4 causes a greater degree of failure under unfavourable fluctuations. The use of a smaller apparatus with higher qk will be helpful if the conditions exist which favour economically a small washer with a moderately large water flow. The benzole washers would have a similarly greater degree of stability in performance.

Continuing on these lines, it is found that if the washers (n = 4 or n = 12) are unexpectedly raised in operating temperature so that the qk values are halved, the disparity in effect is further exaggerated. Thus :

If qk = 2 giving 6% slip is reduced to qk = 1 and n = 4, the slip is now 23.5%.

If qk = 1.1 giving 6% slip is reduced to qk = 0.55 when n = 12, the slip is approximately 45%.

Conversely, if the shift of temperature is favourable and qk is thereby improved in the ratio 7 to 10, the effect is less notable in the washer with 4 than that with 12 sections.

Thus : With n = 4 and qk = 2.86 instead of 2, the slip becomes 2.3% instead of 6%, whereas :
With n = 12 and qk = 1.57 instead of 1.1, the slip becomes 0.4% instead of 6%.

The fact of a gratis improvement in performance is not necessarily gratifying in the case of an ammonia washer, though it may have attractions in benzole and naphthalene removal. In the ammonia removal process, a regulated input of ammonia to purifiers is usually sought.

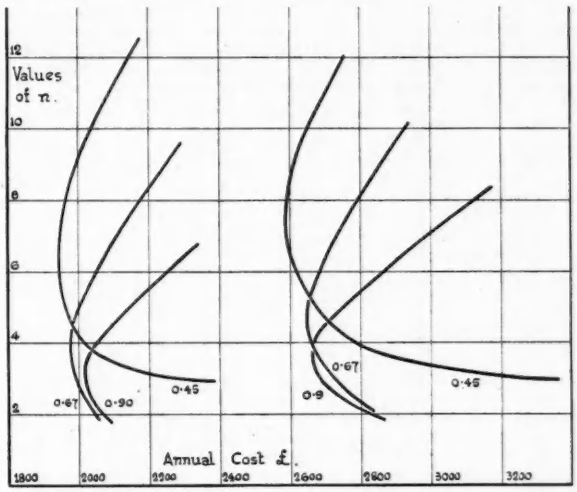


Fig. 5B.
Benzole 50%.
Steam 1s.

Fig. 5A.
Benzole 50%.
Steam 4s.
Water 1s.

Thus, the full range of slip figures, for a variation in qk of about 3 : 1 is 23¼% to 2½% in the case of n = 4, but the range is 34% to 0.4% for the less stable 12-chamber washer.

Thus, the nearer the washer is required to work to a critically low value of qk, the more essential is attention to the necessary variation of water feed to keep it so, and this applies more particularly to an 8 or 12 chamber apparatus than to 4 or 6 chambers.

This instability which affects washers working near the critical or minimum value of qk can be kept in check by automatic means —*i.e.*, to control the feed of liquid to maintain the optimum value of qk to meet changes of temperature or of quantity of gas treated.

Benzole Recovery

The estimates made in respect of this process are carried out in much the same way as the foregoing estimates for ammonia recovery, but there is this difference, that the auxiliary process for obtaining the benzole product after washing it out from the gas is entirely charged. There is another difference, which arises from the optional character of the benzole removal process: ammonia has to be removed, but benzole removal can be undertaken to any desired degree. Hence we have to consider the removal of, say, 50%, 85%, and 95% of the available benzole as separate questions.

At this stage it should be noted that the product benzole is not a single substance, and that its several constituents are recovered into contact with unit volume of the gas. To avoid (or to evade) some complexity in making the calculations, while allowing for the hydrocarbons heavier than benzole, it is conventionally assumed that 20% of the initial "crude benzole" content is easily and inevitably recovered, and that the remaining 80% is subject to the physical relations of benzene itself. Thus, a "crude benzole" recovery of 50% means a 37.5% recovery of the benzene 80%, or 30% of the total plus a bonus 20%. This relation is only rough and would not correspond necessarily with any particular type of gas, but it is thermally more sound than calculating only the recovery of one substance—*i.e.*, benzene. It has an experimental basis. To complete this explanation, a recovery of 85% 'crude benzole' means 81.25% of the benzene, and 95% recovery means 93.75% of the benzene.

A gas stream of 6 mill. cu.ft. daily is assumed in all cases.

The distilling plants for the treatment of the oil are taken from standardised sizes. Two types are actually involved: a less efficient type (working at atmospheric pressure) is assumed for oil flows up to about 2,000 gall. per hour, and a more efficient type, distilling under vacuum, for the higher rates. At the point of separation of the two series, the capital costs are closely to-

gether, and in either field the choice is roughly justifiable, though there may be some debatable cases on the boundary line.

As regards washing plant, the estimates consider not less than three sizes of washer section. This appeared necessary on account of the relative ease of obtaining a 50% recovery.

The annual cost estimate, therefore, takes into account the capital costs and maintenance on a gas washer and a recovery plant, the power for the washer and oil pump, and the steam, water, and oil replacement for the recovery unit.

The calculations begin by estimating (for each size of washer bay) the value of qk for benzene required in various numbers of bays, each combination being capable of giving the recovery specified (50, 85, or 95%), and calculating from n the capital cost of the washer and from qk the capital and working costs of the stripping unit. Two figures for steam cost are employed, as in the ammonia washing section, one assuming a low cost as exhaust or waste-heat steam (1s. per 1,000 lb.) and a higher cost (4s. per 1,000 lb.) for steam raised from solid fuel.

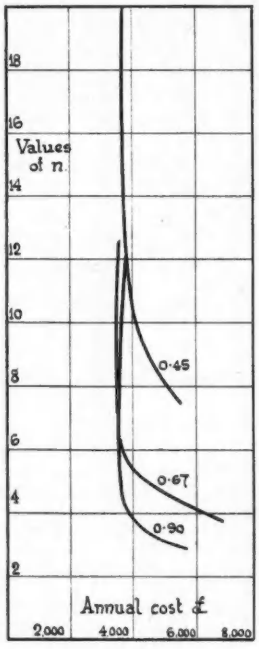


Fig. 6B.
Benzole 85%.
Steam 1s.

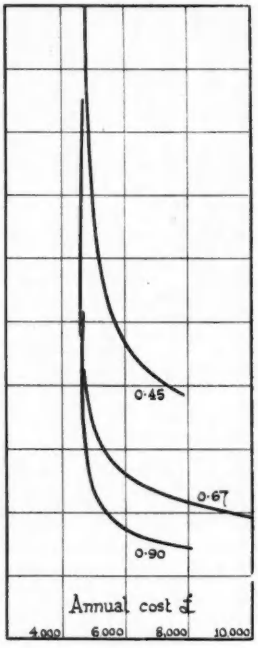


Fig. 6A.
Benzole 85%.
Steam 4s.
Water 1s.

Altogether six sets of curves are presented: two (Figs. 5a and 5b) relate to 50% recovery, and each allows for all three sizes of washer but for only one steam cost rate. The same arrangement of three curves on each of two figures (Figs. 6a, 6b, 7a and 7b) applies to the recoveries of 85% and 95%.

Apart from the value of the actual annual costs, two conclusions are very apparent. All the minima on any one figure lie very close together. Thus:—

TABLE III.

Comparison of Minimum Costs.

	n	qk	Cost		n	qk	Cost
			50% recovery				
Steam at 4s.:				Steam at 1s.:			
1.	8	0.39	2,590	1.	6	0.38	1,940
2.	5	0.40	2,640	2.	4	0.42	1,970
3.	4	0.38	2,660	3.	3	0.41	2,010
			85% recovery				
Steam at 4s.:				Steam at 1s.:			
1.	20	0.95	4,800	1.	16	1.00	3,700
2.	12	0.92	4,600	2.	9	1.04	3,500
3.	8	0.92	4,600	3.	6	1.03	3,500
			95% recovery				
Steam at 4s.:				Steam at 1s.:			
1.	24	1.28	5,800	1.	24	1.28	4,500
2.	15	1.26	5,800	2.	13	1.33	4,400
3.	10	1.24	5,800	3.	9	1.29	4,400

The other conclusion is that it is worth while to use washers of greater capacity for benzole washing than has been customary where static washers are in question. The greater capacity may be expressed almost indifferently in terms of number of bays or in increase of unit size (subject to certain limitations in the extreme cases).

In contrast with the results on ammonia, we have to conclude that, whereas in the latter case current practice probably employs more complex washers than is necessary or economic, in benzole recovery the advantage lies on the side of using more units in the washer than is usual.

How far are these general conclusions applicable to washing gas in filled scrubbers (tower scrubbers)? In the first place there is no practical use of a single and simple counter-current tower for the ammonia removal operation. The accurate distribution of as little water as 0.5 gall. per 1,000 cu.ft. is difficult enough, and if to this difficulty is added the probable effects of fouling, it may be considered impracticable. When oil washing at rates at least 10 times greater, for benzole recovery, is in discussion, fluid distribution becomes more manageable, and single scrubbers for gas rates of something over 6 mill. cu.ft. daily can be designed.

The figures quoted for results on differing sizes of static sectional washer happen to ignore the fact that in washing operations, as gas velocity increases there is a steady increase in the mass transfer rate. This, however, it not as important as would appear, because in actual design of static washers, considerations of resistance to flow preclude most of the more extreme cases of use of small sections—*i.e.*, the use of high velocities. Moreover, in the static washer the overhead circulation can be fixed at a high and uniform value, irrespective of the qk value, which makes comparison of performance of different sizes of section more manageable.

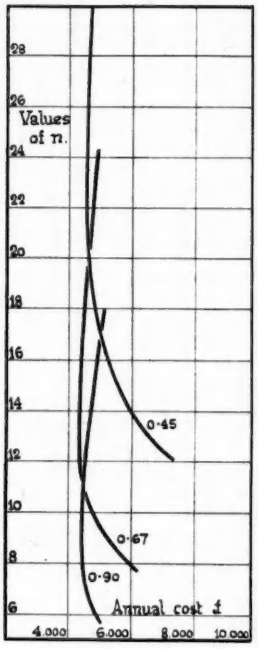


Fig. 7B.
Benzole 95%.
Steam 1s.

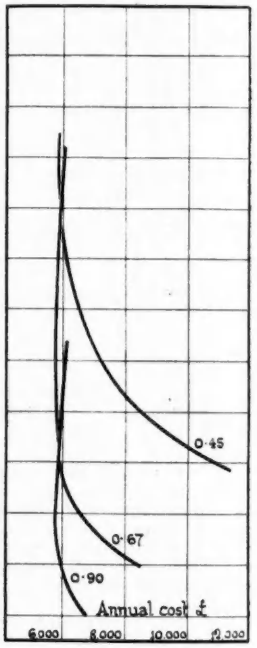


Fig. 7A.
Benzole 95%.
Steam 4s.
Water 1s.

It may be noted that the value of the recovered hydrocarbons such, and the thermal consequences in the carbonising plant, are not accounted for. What is attempted, as in the section on ammonia washing, is an assessment of the cost of the operation of removal from the gas.

Conclusions on Design

It is of some interest to observe that the qk for all the optimum cases for the highest degree of recovery is invariably about 1.3. This is the flow ratio recommended by the advisers of the Ministry of Fuel and Power and the Institution of Gas Engineers, when the industry was circularised during the war on recovery of benzole and toluol.

It is the optimum figure quoted by W. K. Hutchison in respect of a related problem in removing sulphur compounds from gas by oil washing in a paper presented to the Institution of Gas Engineers (Trans. I.G.E., 1937-38, p.294).

Comparing with these figures the results obtained for the somewhat easier yield of 85%, we see that even here the economic minimum is represented by a low oil rate and a high scrubber cost. The use of steam at low cost does not materially encourage a high oil ratio. The average qk value is about 1.0.

Carrying the comparison further, we see that the extra benzole (10% of the initial content—say 0.35 gall. per ton) costs £900 to £1,100 per annum to recover, apart from costs incurred in gas-making on the thermal account. We may provisionally assume 400 tons of coal per day to make 6 mill. cu.ft. of gas, and 100,000/120,000 tons per annum, so that we are obtaining 35,000/

the ammonia washers, from the risk of naphthalene deposition, but it would also deal satisfactorily with gas for immediate distribution where the requirements were not very onerous. The system is indicated in the flow diagram, Fig. 10, and it will be seen that the essentials are that the gas is continuously washed with an excess of oil which is kept in a condition of low naphthalene content by the continuous bleed off of the requisite proportion (say, qk = 10) to the distilling plant. The stripped oil from the latter simply returns to the stock.

The rate of circulation of oil over the scrubber is necessarily so high, if the scrubber is of reasonable diameter, that no perceptible change in naphthalene concentration occurs in the oil in passing through.

A scheme such as this may be based on a performance in the tower of various rates of efficiency, and this particular case has been based on 0.98 in the tower. That is to say, the naphthalene content of the gas is, assuming it is saturated, brought down to within 2% of the original difference of partial pressure between the incoming gas and the circulating oil.

In Fig. 11 are shown the requirements in order that the gas shall be stripped of naphthalene to the extent of 80%, when taking account of the performance of the oil distilling plant, the latter being adjusted to give the correct rate of stripping; and this would also form a model of the method by which all the points on the curves on Fig. 9 have been obtained.

The diagram, Fig. 11, in the vertical direction represents to scale the performance of a single-stage washer with efficiency 0.98 and qk 10, coupled with a stripping apparatus for removing the naphthalene from the oil stock at the same rate as naphthalene is acquired from the gas and absorbed in the oil.

In these circumstances, the rise in saturation of the oil is OB, which is 8.93 if OP is 100 and PB is 91.07. The value at A, the saturation in outlet gas, is 10.7 and P^1A^1 is 89.3. Thus P^1A^1/PB is 0.98. These quantities are calculated by the usual method.

The line 00^2 is a base line for the gas washing operation only, and represents the partial pressure of naphthalene in the oil returning to the washer. This is, however, not by any means zero.

We have stipulated that the overall removal of naphthalene from the gas is to be 80%. Consequently, we can draw a true zero line CC^1 so that P^1A^1 is 0.8 of P^1C^1, and we can thereby estimate that the height O^1C^1 is 11.63. The section BB^1C^1 now represents the countercurrent stripping operation in the still, oil being drawn at saturation B, and stripped to saturation O^1, with steam which enters at zero concentration of naphthalene, and leaves at concentration O. This stipulates the effective performance of the distilling operation, and is found to require an efficiency of 43%. The design of the oil stripping unit is therefore based on dealing with the quantity of oil which stands for qk = 10 in the washer, and removing from it 43% of the acquired naphthalene. This fixes the quantity of steam to be employed in the still at a given temperature, which, for normal purposes, may be assumed to be 125°C.

From all these requirements we estimate the two main capital costs, that is, for the washer and the oil treatment plant, the power for driving the main pump, the steam for distilling, and the water for cooling and condensation.

The two estimates are given in the accompanying Table V with steam charges at 4s. per 1,000 lb. and alternatively 1s. per 1,000 lb. as before.

TABLE V.

	Naphthalene 80%	Tower 0.98
	£	£
Capital 1	500	500
Power	91	91
Capital 2	137	137
Steam at 4s.	545	
Steam at 1s.		136
Water	136	136
	£1,409	£1,000

It will be observed that in general the overall cost of working in this way with a single-effect washer is likely to be higher than with any economic size of static washer, and in the cases shown this is so to the tune of something like 50% over the calculated minimum. In spite of this fact, however, the method is one which has certain applications, particularly where the oil is liable to be heavily fouled, the loss of effect in an open packing in a tower scrubber being less serious than in the more intimate arrangements of a static type washer.

Summary

The specific figures arrived at in the course of the investigations outlined above cannot be held to have any absolute value, relating as they do to the following of certain techniques and the employment of capital costs belonging to a certain range of manufactures. Nevertheless, the method reveals that current practices in certain gasworks washing operations might be noticeably modified if due regard were paid to the overall costs of the processes, instead of to the specific efficiencies of the gas washing units involved. In particular, the performance of an ammonia washer should be studied in connection with the ultimate disposal of the ammonia product rather than with a view only to reducing the overall volume of ammonia liquors for disposal.

The extraction of ammonia should be carried out in such a manner as to give assistance in effecting the final purification from H_2S, which calls for a regular and controlled performance.

With regard to benzole recovery, and even more so with regard to naphthalene washing with cyclic recovery of the wash oil, it appears that the cost of steam in the auxiliary process is the dominating item.

The conclusion therefore would be in these cases that the oil rate per unit volume of gas should be kept to a low and controlled figure, and the washing equipment increased to make the low rate effective.

Some observations are also included pointing out the comparative instability of conditions in such washing operations which exist when flow ratios of liquid to gas are held close to theoretical minima, such instability arising, for example, when temperatures of operation are liable to vary over a quite modest range. As it appears that in the case of washing for ammonia it is seldom economical to approach close to the theoretical minimum, insistence on a high washing efficiency itself appears doubly unjustifiable.

In the case of the other operations, attention to adjustment of the flow ratio to meet such fluctuations of temperature, &c., appears to be called for.

MANCHESTER GAS DEVELOPMENT CENTRE

The inaugural meeting of the newly constituted Manchester Gas Development Centre was held at the Manchester Gas Department's Showrooms on Feb. 4.

Twenty-nine undertakings have agreed to be members; these include Accrington, Altrincham, Ashton, Atherton, Blackburn, Bolton, Clitheroe, Colne, Darwen, Hayfield, Heywood, Littleborough, Lymm, Macclesfield, Manchester, Middleton, Mossley & Saddleworth, New Mills, North Cheshire & District, Oldham, Oswaldtwistle, Padiham, Radcliffe, Farnworth, & District, Ramsbottom, Rossendale Union, Stalybridge, Stockport, Stretford & District, Tyldesley.

Mr. J. Grayston, Engineer and Manager of the Stretford & District Gas Board, was elected Chairman, Mr. J. Weatherhead, of the Manchester Gas Department, Vice Chairman, and Mr. W. F. Howell, also of Manchester, Secretary.

STANDARDISATION AND PRODUCTION

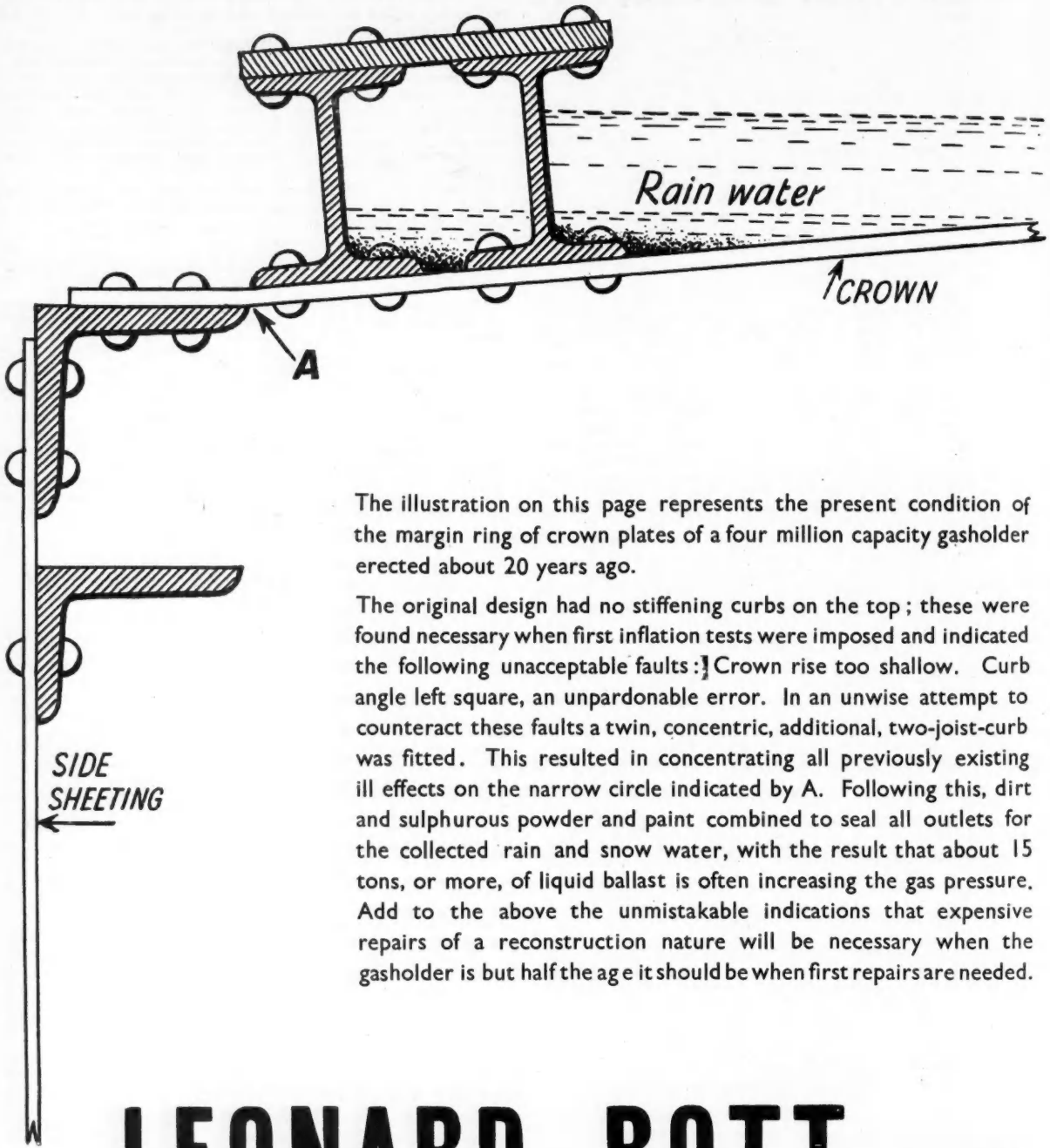
Mr. Roger Duncalfe, Chairman of the General Council of the British Standards Institution, in offering a welcome to the Rt. Hon. Harold Wilson, M.P., President of the Board of Trade, and to the Rt. Hon. G. R. Strauss, M.P., Minister of Supply, at the British Standards Institution dinner on Feb. 23, drew attention to the part played by the Institution in providing a suitable platform for informed discussion and proper representation of all the interests concerned in the production and use of industrial standards.

In reply, Mr. Harold Wilson said that the Board of Trade had taken an active interest in the work of the Institution for many years, and it was the desire of the Government to see that the position of the British Standards Institution was strengthened, and that its activities should continue to grow at an even greater rate than they had in the past. He was much impressed by the growth of the work, and offered his congratulations to those sections of industry which, in co-operation with the Government, had created the B.S.I. and formed it into an essential instrument in the economic life of the country. Mr. Wilson urged all sections of industry to give to the question of the preparation of national standards their closest consideration, and he assured the audience that the British Standards Institution as now run would continue to receive his fullest support. He referred to the utility scheme, which was in effect emergency standardisation, and which had proved of great value to the community. He invited manufacturers to co-operate with the B.S.I. in the development of standards and in the use of certification marks to indicate conformity with a British Standard.

Mr. G. R. Strauss, Minister of Supply, in proposing the toast of the Institution, said that his Ministry was particularly interested in matters of engineering standardisation, and in this connection he had become impressed with the importance of the work already carried out by the B.S.I. in the field of simplification and reduction of the number of types and sizes. He felt, however, that it had not yet extended to a number of products used by industry today, and he was therefore still anxious to see a substantial extension of this work. It had become clear to his Ministry that industrial production could be substantially accelerated. He had set up a committee which was meeting representatives of the national bodies and the various branches of the engineering industry and discussing standardisation problems with them, and he expected that to give effect to the recommendations of this committee would result in a great extension of the work of the B.S.I.

PROFITABLE

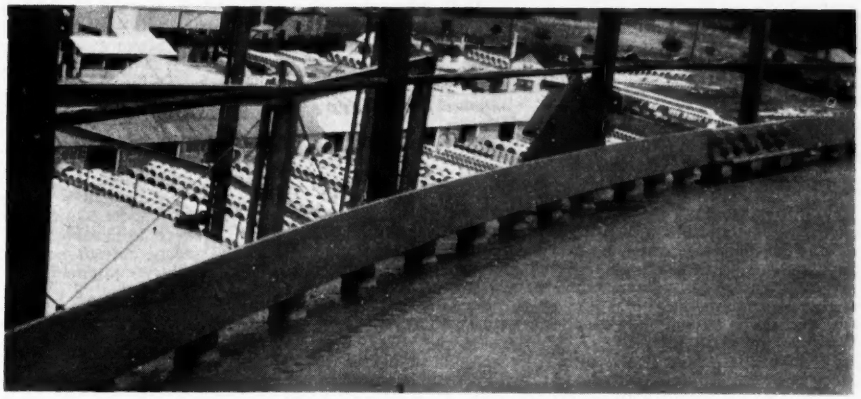
GASHOLDER INSPECTIONS AND REPORTS



The illustration on this page represents the present condition of the margin ring of crown plates of a four million capacity gasholder erected about 20 years ago.

The original design had no stiffening curbs on the top; these were found necessary when first inflation tests were imposed and indicated the following unacceptable faults: Crown rise too shallow. Curb angle left square, an unpardonable error. In an unwise attempt to counteract these faults a twin, concentric, additional, two-joist-curb was fitted. This resulted in concentrating all previously existing ill effects on the narrow circle indicated by A. Following this, dirt and sulphurous powder and paint combined to seal all outlets for the collected rain and snow water, with the result that about 15 tons, or more, of liquid ballast is often increasing the gas pressure. Add to the above the unmistakable indications that expensive repairs of a reconstruction nature will be necessary when the gasholder is but half the age it should be when first repairs are needed.

LEONARD BOTT, LTD.



Above.

A somewhat similar fault of design to that on the opposite page, but not so serious.

This was found by Leonard Bott very soon after the putting into use of a one million gasholder. Basing their conclusions on the report of their Outdoor Manager, the makers denied any serious fault. Upon personally inspecting the fully inflated 'holder, they instantly admitted the weakness and submitted a remedy, almost as ineffective as the one illustrated on the previous page. Leonard Bott sketched the one, illustrated above, on the spot. It was accepted as "one hundred per cent. more effective and one hundred per cent. less costly than our design."

It has proved so over ten years.

SPECIFICATIONS EXAMINED AND IMPROVED.

CONSTRUCTION, ERECTION AND TESTING SUPERVISED.

See also, advertisements in "Gas Journal" Calendar and Directory, pages 384-385

15, HOLYHEAD ROAD, WELLINGTON, SALOP.

Telephone : 320.

COMMERCIAL AND INDUSTRIAL UTILIZATION OF GAS: NO. 12

By F. DICKINSON, M.Inst.F.,

Industrial Gas Engineer, Newcastle and Gateshead Gas Company

(*Continued from p. 590*)

GENERAL SUMMARY

Approach to Consumer

While the size of gas undertaking in which a student may eventually serve might not warrant the creation of the specific position of Industrial Gas Engineer, there will be very few supply areas where he is not liable to be called upon to promote or be associated with the development of Commercial and/or Industrial gas sales. It is, therefore, necessary that he should be fully cognizant of the functions and scope of activities connected with this important aspect of gas sales.

The Industrial Gas Engineer is primarily the direct negotiating link between the undertaking and Commercial and Industrial consumers. He is essentially selling technical ideas rather than a selection of unit appliances of known capacity and established prices. He must first sell these ideas to a client with a view to creating initial interest, follow this with prepared detailed estimates of economic, operational, and capital costs, and re-sell the proposition to the point of final interest and acceptance; possibly arrange for the purchase and installation of the plant, see it through the acceptance tests, and finally, service it throughout its working life. Incidental to the above, he must assess the maximum potential hourly gas demand and appropriate meter size, estimate the size and cost of branch, service, and mains extension, as well as negotiate the contracts for meter hire and gas charges. He must also deal with all correspondence in respect of enquiries, estimates, technical information, contracts, service, and complaints in respect of his consumers.

Even a cursory glance at the syllabus set out in Article No. 1 reveals the desirability of having a background of theoretical knowledge, practical mechanical engineering, and metallurgical experience to enable a man to readily appreciate the details of the varied process requirements with which he will have to deal. This presumes an engineering apprenticeship, coupled with a sound technical education and some drawing-office experience. Unfortunately, circumstances do not always permit such cumulative preparation, and it is a prime essential to be able to talk to industrialists in their own language to ensure that initial interest is created and maintained.

The object of these articles, therefore, has been to open up avenues of technical interest of which a student might otherwise be entirely unaware—as in any one district the number of trade processes will necessarily be limited by local trends and circumstances—to guide him upon general informatory lines, and to impress upon him the necessity of consistently developing and collating further detailed information from technical sources and practical experience to form a vital background for future reference.

Preparation of Propositions

The method of dealing with individual projects was approached from the psychological and survey angles in Article No. 1. From the practical aspect, a customer does not expect even an expert to be fully conversant with all the details of his particular processes, but he does expect him to readily appreciate and absorb the explanation and background of the requirements to enable him to formulate a satisfactory proposition. Stress must, therefore, be placed upon the necessity of giving meticulous attention to the precise and defined details supplied by the customer, in order that furnaces will be designed to meet all operational demands with the greatest practical efficiency. Some of the requirements can be met by the use of ready-made appliances or units, others may require experimental work before a final design can be formulated, but most process applications can be passed direct to furnace makers. The usual practice is to pass an enquiry to at least two furnace makers who specialize in the type of furnace or furnaces suitable for the particular applications in question, and will produce a first-class installation complete with appropriate controlling and recording equipment, where applicable. In every case certain information will be required by them, much on the following lines:—

Type of metal to be treated.
Size of metal to be treated, per unit piece.
Weight of metal to be treated, per unit piece.
Weight of metal to be treated, per hour.
Operating temperature range.
Type of furnace atmosphere required.
Type of charge and discharge arrangements.
Knowledge of general production operations.

The initial expenditure involved in the installation of controlling and recording equipment will be amply justified by the resultant fuel economy, minimising of reject work, straightline production, and repetitive value. Where applicable, safety devices such as flame-failure units and safety cut-out switches should be incorporated in burner on ancillary equipment.

Development of Loads

The approach to an individual factory for market survey purposes, with appropriate variations for differing process applications, is basically correct for most factories. The wider view, however, must always be maintained, *i.e.*, that such independent surveys are part of the whole picture of an area survey, the concentration upon the building-up of gas loads in one factory being a measure of the success of total development of the supply area in question. This may not necessarily follow the trend originally envisaged, possibly due to variations of internal or external policy or for other reasons beyond control, but close technical liaison and sound personal relations with consumers will enable contacts to be maintained that will almost inevitably ensure that the extension of gas load will be included in any development schemes.

It is logical that gas production should be directly related to gas demands as an engineering and economic function, and, when datum lines of normal and maximum domestic usage have been established, to consider the cultivation of stabilizing loads to fill the charted valleys of demands without increasing peak demand. If this can be done, it will materially assist the gas production schedule and increase the overall efficiency of the manufacturing plant. This, then, is one of the functional reasons for the desirability of creating an area survey in the first instance, and amending the basic structure of this from time to time in the light of modifying circumstances.

As the primary function of gas production is to meet the demand for domestic utilization, so the gas available for Industrial development is in effect that which remains; within the limitations imposed by existing works plant, supplementary extraneous supplies, and peak demands. The possibility of having at a later date to produce or obtain further supplies of gas, in the event of the demand approaching the limits of existing supplies, is a matter which cannot be entirely relegated to the background, and the capital cost of such must necessarily be the subject of relevant consideration. It must, therefore, be reflected in any tariffs that are formulated to attract these stabilizing loads, as there is little virtue in promoting them with gas at prices that may evenually prove uneconomic.

Maintenance and Development

The service rendered to consumers is a valuable asset to both parties, and should be maintained at high level whether of a technical, mechanical, or personal nature. The varied problems which arise call for collaborative effort and highly selective improvisation to ensure the best planning and design appropriate to the requirements. As no one person can be expected to be conversant with every type of process application a Centres Organization was established some years ago for the interchange of technical information through the medium of an Information Bureau. The accumulated data is available to Member Undertakings upon request, and is intended to save them expending valuable time upon experimental work that has previously been explored. This technical assistance is fully appreciated by consumers, and gives support to that "personal touch" which should be upheld at all times as vital to the maintenance of good relations and the development of new business.

On the mechanical side, it is not sufficient to merely recommend and instal plant and equipment. This is mostly of a specialized nature, which can be beyond the experience of a factory maintenance staff, particularly in smaller factories. It thus becomes necessary to make periodic visits of inspection with a view to checking plant performance, ascertaining that operational efficiency is being maintained at high level, and that burner equipment and ancillary plant is being regularly serviced. Where the factory personnel is unable to do this essential maintenance work it is advisable to arrange for it to be done by either the gas undertakings or competent outside firms upon request by the consumer at appropriate intervals. In general, it should consist of inspection and overhaul of jets, burners, control valves, governors, etc., renewal of worn parts, assembly, and a

test under working conditions where this is practicable. There can, of course, be no liability attached to this maintenance work beyond the scope of the actual overhauling work done. It is, however, of great assistance to the consumer both from the practical and psychological viewpoints.

Development work on the design of furnaces, burners, equipment, controls and process applications moves steadily forward all the time, and as another service to the consumer, the Industrial Gas Engineer must be on the alert for any new technique or technical information which he can transmit to both existing and potential consumers in orders that they may be assured of employing the most modern methods in their heat applications. Their appreciation will be reflected in the cordiality with which he is invited to collaborate in the early stages of process experiments. There is an inherent fascination in such experimental work, and a mutual satisfaction in the final achievement of a solution to the difficulties involved, which is compensation for the extensive background work that is frequently entailed. These, then, are some the facets of the versatility that is a requisite of the utilization of gas for Commercial and Industrial purposes, of which these articles can only be considered a starting point.

Reprints in booklet form of the foregoing series of articles will be available shortly—see displayed advertisement p. 626.

COMPANY MEETING

SHEFFIELD AND DISTRICT GAS COMPANY

THE 149th Ordinary General Meeting of the stockholders of the Sheffield and District Gas Company was held at the Company's offices, Commercial Street, Sheffield, on Mar. 14.

Sir FRANCIS STEPHENSON, BT., O.B.E., J.P. (Chairman of the Company), presided, and others present included Mr. W. W. Wood (Deputy Chairman), Lord Riverdale, Col. Douglas S. Branson, Mr. Ralph Halkett, Senr. (elected Directors), Ald. A. Smith, Ald. F. Thraves, and Ald. P. J. M. Turner (nominee Directors), and Mr. Ralph Halkett (General Manager and Chief Engineer). Mr. Edward W. Senior, an elected Director, was unable to be present owing to being out of town.

The CHAIRMAN, in moving the adoption of the Directors' Report and Accounts, said: I presume you will, as usual, desire to take the report and accounts as read, but before dealing with them I would like to make a few more or less general remarks.

As nationalisation vesting date is on May 1, perhaps it will not be out of place if I pay less attention to the year under review than to the past as a whole.

Your Company has been supplying gas to Sheffield for 130 years. During that period we have always afforded one of the cheapest gas supplies in the country. The stockholders have for as long as I can remember received satisfactory dividends, with the staff and workmen getting their share in the form of a co-partnership scheme, which has worked well until the last two years, when the abnormal costs made the price of gas so high that the basis on which the scheme was founded to some extent broke down.

As you have seen from your papers, there has been for some time a shortage of gas. Criticisms have been levelled at our heads and I should like to explain the reasons so that you may judge to what extent the policy pursued by this Company has been at fault.

Your Company was one of the first to explore the possibility of taking coke oven gas, which was at the time illuminating the skies of Sheffield by sheets of flame.

Gas Grid Powers

As long ago as 1918 the Company started taking some of this gas, a further supply was added in 1921, and two additional agreements were made in 1928 and 1929 covering supplies from the Nunnery and the Thorncliffe coking plants. In 1930 a Government departmental committee recommended the construction of a coke oven gas grid in South Yorkshire and in 1931 your Company obtained Parliamentary sanction to carry this recommendation into effect. It was the intention of your Company to collect and distribute the whole of the surplus coke oven gas within the coke oven gas limits, and indeed it was the desire of the coke oven owners that we should do so.

The Rotherham Corporation lodged a petition against the Bill on the grounds that it would denude them of coke oven gas. While the Bill was before the House of Commons Committee the Sheffield Chamber of Commerce, acting presumably on behalf of the city's industries, assisted Rotherham in their opposition to the Bill by providing expert witnesses. Through this action, your Company, in order to save the Bill, had to concede to the Rotherham Corporation the right to a larger supply of gas at a much lower price than would otherwise have been necessary, and consequently the industries of Sheffield were deprived of the plentiful supply of gas which the Bill was designed to give them.

Furthermore, although the Rotherham Corporation were already protected by agreements entered into with the coke oven owners in their district for more gas than they were at that time supplying to their consumers, they obtained powers enabling them to call upon your Company, by giving notice, to provide a further supply up to 3½ mill. cu.ft. per day, in such quantities as they thought they would require. It was several years before they were in a position to take the full quantity, but by the time there was a demand for that gas in Sheffield the Rotherham Corporation requisitioned it and it had to be released to them.

The result was that your Company had to manufacture gas at a cost very considerably higher than they were empowered to charge for the gas they were supplying to the Rotherham Corporation from the grid. In other words, for a number of years your Company was carrying Rotherham's peak load, with the result that they were able to supply their industrial consumers with cheap gas to the disadvantage of the Sheffield industries.

The Industrial Load

Had this additional gas been available the difficulties with which your Company has from time to time been confronted would, to say the least of it, have been considerably lessened and gas rationing in any form would probably not have been necessary.

Another point that is not generally appreciated is that while domestic loads increase slowly and it is therefore possible for a gas company to keep pace with any increased demand, in the case of industrial loads the increase can be much more sudden and for very much greater quantities, and unless due notice is given it may be impossible to meet the demand.

When the grid was first formed in 1931 the large users of gas who were to benefit by a great reduction in price contracted for specified amounts of gas; by 1936 they were already taking far more than they had contracted for and were demanding still more. If the users of gas could not foretell how much they were likely to use, how much more difficult was it for your Company.

In 1943, your Company was in fact supplying an annual quantity of 15,306 mill. cu.ft. of gas and very nearly meeting the demand made upon it in full. For various reasons, since then the supplies of coke oven gas have fallen off on weekdays, when the gas is most needed. This brings to light another problem which has to be dealt with in an undertaking like yours when the industrial load is three times as heavy as the domestic, namely, the disposal of gas at the week-ends.

By the acquisition of such companies as Matlock, Bakewell, and Baslow, some of this gas was disposed of, as during the week these districts were supplied by gas manufactured at Matlock and by shutting down at the week-end they were able to absorb some of the surplus from Sheffield.

I need hardly say that during the year under review every effort has been made by your Company to overcome this shortage of gas and that all available plant at the gasworks has been operated to capacity. When all these circumstances, to say nothing of the damage during the war, are taken into consideration, I think you will agree that who ever else is to blame for the present shortage of gas, it most certainly is not your Company, or the policy that has been pursued by your Directors.

In connection with the proposed acquisition of the Wirksworth Gas Undertaking, the Ministry of Fuel and Power made a request that in view of nationalisation the transaction should be carried out so as to make the Wirksworth Undertaking a subsidiary of the Sheffield and District Gas Company, and you will see from the balance sheet that it has been treated as such.

Turning now to the accounts, you will see that the only change in the Company's capital structure is the increase in borrowing powers, which now enable the Company to issue loan capital equal to the amount of issued stock capital, plus premiums.

Capital Expenditure

Capital expenditure during the year has been £62,966. This amount includes work on new gasholders, new carburetted water gas plant, and purifiers, as well as mains extensions. The amount of capital expenditure in excess of issued capital, after making provision for appropriate depreciation, now stands at £82,245.

An examination of the revenue account shows that the proceeds from the sale of gas have now reached well above the two million pounds mark. The reasons for this are the higher charges for gas and an increase in the quantity sold. As mentioned in the Directors' report, the total quantity of gas sold during the year was greater than in 1947 by 7.4%.

With regard to the balance sheet a regrouping of the different classes of debtors has been made, and in order that the 1947 figures could be fairly compared they have been reanalysed and regrouped to correspond to present day grouping.

From the Directors' report you will see that a transfer of £13,547 from the reserve fund together with the sum of £6,976

already shown in the profit and loss net revenue account as transferred from the reserve fund at June 30, 1948, makes a total transfer from that fund of £20,523 for the year.

Subject to your passing the necessary resolution, it is proposed to pay a final dividend for the year to Dec. 31, 1948, at the rate of 6½% per annum, less income tax.

On the distribution side of your undertaking, work in the street mains department has continued steadily. Extensions of mains and services have been carried out on various Sheffield Corporation and other local authorities' housing estates, including the outlying areas of Oughtibridge and beyond.

These extensions, among others, bring the total length of mains laid during the year to 10½ miles, and 2,120 services have also been laid or renewed during the year.

The fittings department has again been fully engaged during the year, and in spite of restrictions a considerable quantity of heating and cooking apparatus has been installed.

The activities of the industrial department have continued on much the same lines as in previous years, and a number of new major items of industrial equipment have been installed by or at the recommendation of the department.

It now only remains for me to point out, as other chairmen of companies to be nationalised have done, what a bargain the State are getting—large reserves of money collected over many years, with works maintained in really first-class condition.

It is also my duty and pleasure to pay a warm tribute to Mr. Halkett and all the employees of the Company for the loyal and devoted service they have given.

Final Meeting

We shall have to have a final meeting after vesting date to deal with the period Jan. 1 to April 30, so that there will be an opportunity then to say more on that subject.

I have pleasure in moving that the Directors' report and accounts be approved and entered on the Company's minutes, and that a copy of the resolutions of this meeting be sent to each stockholder.

Mr. WOOD seconded, and the resolution was carried unanimously.

The Chairman moved that a dividend of 3½%, less tax, be declared on the Consolidated stock for the half-year ended Dec. 31, 1948, making a total dividend of 6½%, less tax, for the year 1948; and that for this purpose a sum of £13,547, additional to the £6,976 transferred at June, 1948, be now transferred from the Reserve Fund to the Profit and Loss Net Revenue Account; and that the final dividend for the year 1948 be paid on Mar. 17, 1949.

Mr. WOOD seconded, and the resolution was carried unanimously.

Chairman Re-elected

Mr. F. J. JOHNSON moved the re-election of Sir Francis Stephenson and Mr. W. W. Wood as elected Directors of the Company. He added that, as Sir Francis had said, they would have another meeting before the 'funeral ceremony,' and he would leave his other remarks until that time.

Mr. J. H. FIRTH seconded the resolution, which was carried unanimously.

Mr. MARK BARBER, on behalf of the stockholders, said he had been asked to move a vote of thanks to the Chairman. They were all grateful to him for taking the chair at that meeting and for his very illuminating remarks about the Company's affairs.

Mr. Barber said he would like to incorporate in the vote of thanks their gratitude not only to the present Chairman, Directors and Staff, but also to the many people who had shown such imagination and put in so much hard work on the Company's behalf during the past 149 years.

He presumed, in view of vesting date, that that was the last annual general meeting of the Company, and that it would, therefore, not attain the good round age of 150 years.

He felt that this was not entirely a matter of finance. As the Chairman said, the shareholders had always received very good interest on the money invested, but he thought the shareholders also had been proud to be connected with what, after all, was the greatest undertaking of its kind in the country. He felt that the Sheffield Gas Company was a very good example of the kind of thing which had made this country so great. It had shown both solidity and imagination and at the same time, really valuable service to the public.

Mr. F. G. PYPER seconded and the resolution was unanimously approved.

The CHAIRMAN, in acknowledging the resolution, said he and the other Directors were fully conscious of what the past directors had done.

The Intelligence Section of the Gas Research Board has now moved from 14, Cromwell Road, S.W.7, to the Board's headquarters at the Abbey, Southend Road, Beckenham, Kent (telephone Beckenham 5015).

POINTS FROM CHAIRMEN'S STATEMENTS

Sir George Evetts, O.B.E. (Gloucester Gas Light Company).

The Company, formed in 1820, was one of the pioneers in town gas supply, and was 35 years in existence before there were 1,000 customers on the books. In December, 1948, there were 21,265, with 141 miles of mains, the sales of gas amounting to 1,231 mill. cu.ft. The increase in the past 10 years has been 102%. During the war the mains at Cheltenham and Stroud were connected for the purpose of mutual assistance in emergency, but in fact these connections have been adapted to peace time use, and apart from selling gas for the needs of Stroud, it is possible for that Company to give a supply beyond the capacity of its own works, and we are now supplying the Dursley undertaking with gas at the rate of 100 mill. cu.ft. per annum. The Board are satisfied that the undertaking is being handed over in a thoroughly sound condition, with a staff willing to react to any encouragement to give of their best.

Lieut.-Colonel A. Buckley (Liverpool Gas Company).

A satisfactory feature of the new legislation is the large measure of local autonomy which the Area Boards are apparently to enjoy. The North Western Gas Board is fortunate in having for its Chairman Colonel W. M. Carr, who is a gentleman of wide practical and administrative experience extending over many years in the gas industry. In this respect, therefore, it may confidently be hoped that the high standard of service hitherto rendered by the Liverpool undertaking to its consumers will be maintained. In spite of the record sales of gas in 1947, the year under review shows a further increase of 2.78%. In 1948 the effect of domestic development work on gas sales represents a potential net increase of 2.2% on the total sales of gas for this purpose in 1947. The increase in industrial and commercial gas sales was 14.6% and new loads have been obtained for process hitherto unknown in this area.

Mr. R. Lishman, J.P. (Newcastle and Gateshead Gas Company).

So far as this undertaking is concerned the State is getting a great bargain. In few if any of the gas companies to be acquired by the State will so valuable a property be obtained so cheaply. The year 1948 has seen a further expansion in your Company's sales of gas of no less than 1,200 mill. cu.ft. The re-opening of Scandinavian coke markets has made a valuable contribution to our increased prosperity. Your Company may claim to have been among the first, if not indeed the first, to recognise an impending change in the coke situation which would leave an exportable surplus over home requirements. By the persistence of your officials the Government was brought to recognise this change and to agree to issue export licences in time to avoid the accumulation of excessively large stocks of coke. Your directors congratulate Mr. Crowther upon his appointment to be Chairman of the Northern Gas Board and wish him success, good health and happiness in the larger responsibility for which he is so well equipped. It was a well deserved honour, and gave much satisfaction to the Board when Mr. Crowther was elected President of the Institution of Gas Engineers for the year 1948-49. To meet the situation brought about by Mr. Crowther's resignation, your Board have appointed Mr. J. E. White to be Acting General Manager. Mr. White has had a long and distinguished career with the Company as superintendent of gas sales.

Mr. Frank H. Jones (Commercial Gas Company).

The year 1948 has seen a substantial consolidation of the favourable position which the Company had built up by the end of 1947. The transfer of £50,000 from the net revenue account to the credit of our net revenue deficiency suspense account means that our war-time losses have been finally written off, and this transfer represents, in the history of the Company, a milestone which we are very glad to have passed. Sales of gas to the Company's consumers showed an increase of 7.49% by comparison with the year 1947. In itself this is very satisfactory, although the increase was predominantly industrial. The domestic sales increase is expected to come later and I should like to make it clear to you that war damage clearance is proceeding apace within our area and that the population is still only 53% of the 1938 population. Even so, the sales of gas are 77% of the 1938 sales. Consumption per consumer by comparison with the 1938 figures is increased by 17% for prepayment consumers and 34% for ordinary consumers. There is still a large number of 'no consumption' prepayment meters on the district, many of which are in empty premises scheduled for demolition owing to war damage. It is for this reason that I do not quote the actual unit prepayment consumption which is thereby artificially lowered. We can, however, look forward to substantial numbers of new dwellings coming into use very soon and to a steady advance in domestic consumption. Thus there are 1,765 dwellings now under construction within our area of which 800 should come into occupation before July. It is true that business still has to be obtained in competition with electricity, but during 1948 the Company obtained three-quarters of the cooking load of all new dwellings coming into habitation and we expect to do better than this in 1949.

TRADE NEWS

A new acid-resisting boot has been designed by Dunlop Rubber Co., Ltd., for use by workers in chemical plants, electro-plating works, and elsewhere. By reversing the seams the new boot overcomes the problem of acid lodging in the seams and building up a concentration, and has been tested successfully at the Manchester footwear laboratory.

* * *

Wellington Tube Works, Ltd., whose head offices and works are at Great Bridge, Tipton, Staffs, have opened a London office at 36, Victoria Street, S.W.1. Telephone No. Abbey 1326/7. This will be the headquarters of their London representatives, Messrs. J. A. Blackburn, G. C. Parks, and A. C. Sorrell. The address of the company's London warehouse at Stonehouse Street, Clapham, S.W.4, Telephone No. Macaulay 1182/3, remains unaltered.

* * *

Joseph Crosfield and Sons, Ltd., have published a revised edition of the *Sorbsil Brand Silica Gel* booklet (Technical Publication No. 21). The booklet outlines the main characteristics of the product, which is in use for packing purposes, and the methods of application as an adsorbent and catalyst support. Questionnaire forms are enclosed tabulating the information required by potential users who are invited to send the forms for complete information to Joseph Crosfield and Sons, Ltd., Chemical Dept., Warrington, from whom the booklet may be obtained.

New Ascot Appliances at Olympia

We have already published a general description of the displays at the Ideal Home Exhibition, Olympia, of interest to the gas industry. Here we refer specially to new appliances shown which are attracting a great deal of attention—as, indeed, their merits well justify.

Ascot Gas Water Heaters, Ltd., are exhibiting a prototype instantaneous multipoint gas water heater on the balanced flue principle, on which research has been proceeding in many laboratories for some years. This heater is a product of the Ascot Research Laboratories and differs fundamentally from normal design by reason of its total enclosure and absence of a draught diverter and vertical flue outlet. The outer one-piece casing is airtight and the necessary air for combustion is drawn through a separate flue-way from the external air, and not from the room in which the heater is installed. The products of combustion are similarly exhausted through a second adjacent horizontal flue way, while a wall terminal of special design performs the dual function of admitting air to the inlet flue and allowing a free exit for the combustion products without the possibility of recirculation. To reduce internal air resistance in the heater, a two-stage high efficiency heat exchanger of novel design has been incorporated which incidentally effects a considerable saving in the weight of metal normally required for this component.

Operation of the main and pilot gas cocks is by a single rotary control with positive inter-stage locking, and this control is additionally interlocked with the hinged cover of the lighting port, thus obviating any possibility of blow-back which might occur if the port were opened when the main burner is alight. The Ascot balanced flue heater is considerably reduced in overall height and its operating principles counteract many of the limitations which require consideration when installations of current types of instantaneous gas water heaters are desired in inadequately ventilated or enclosed spaces.

Another new Ascot development is the thermostatically controlled instantaneous multipoint. One version of such an appliance is shown on the Ascot stand, the particular application being in the low water pressure range. The system operates on the basis of maintaining a constant gas input according to the capacity of the heater and controlling the rate of water flow by thermostats to such a value as is required by inlet water temperature and other variables, so that the outlet temperature is maintained at a substantially constant value. The means for controlling water flow are so related to the normal automatic valve system that gas cannot pass to the burner unless adequate water flow is available. This is effected by the combination of a water governor, which ensures a constant flow through the venturi above the minimum at which the automatic gas valve will operate, together with a by-pass water valve in parallel with the venturi controlled by a bellows and phial system. The phial responds to changes in the outlet water temperature in such a manner that an increase in temperature above the predetermined figure causes the by-pass valve to open and increase the total water flow.

'Things to Come'

'Things to Come' as well as things which have arrived are featured on the stand of Thomas Potterton (Heating Engineers), Ltd., at the Ideal Home Exhibition at Olympia. A photograph of the stand, which embraces De La Rue products, was published on p. 583 of last week's *Journal*. An interesting appliance is the six burner cooker, which is attracting a great deal of attention. This appliance fills the gap between the standard domestic cooker and the canteen type of appliance. It has a commodious oven with counter-weighted drop door. First deliveries of this appliance are anticipated within four months. The young relation of this appliance is the new four burner cooker with a central grill. It has the same type of neat and symmetrical top which is easily removable for cleaning purposes.

The (65B) boiling water sink heater, illustrated here, produces 2½ pints of boiling water per minute and has a maximum gas rate of 78 cu.ft. per hour. An integral water governor with a three-position central knob allows a choice of boiling, hot or warm water.

The prototype thermal storage heater shown incorporates a 20 gall. cylinder, a new boiler with a gas rate of 40 cu.ft. per hour, and a "built in" front outlet draught diverter. Two immersion thermostats control the temperature and quantity of water to be heated in the cylinder, a simple switch mechanism links the thermostats, thus giving a choice of 5 gall. or the full 20 gall. capacity of the cylinder.

An extension of activity in the domestic field is seen in the new high-efficiency wash boiler which has a capacity of 8 gall. The heating unit consists of a neat-flame burner with a consumption of 30 cu.ft. per hour and a special heat exchanger, the products passing up a special flue channel at the rear of the pan, thus avoiding excessive surface temperatures and increasing efficiency.

Accessories have a special corner on the stand and include the 'Perfecta' flame failure device which will shortly be standard on all 'Rex' boilers. This new safety device has a very rapid action due partly to the fact that it utilises the relief of pressure for its operation, which also ensures that any failure of the device due to fatigue or damage to relief pipelines causes the component to shut off the supply of gas. It consists of a small head containing a bi-metal disc through which the pilot gas passes. On ignition or extinction of the pilot the curvature of the bi-metal alters, the movement being transmitted to a small valve inside the head. A special control valve, to which the head is connected by two small-bore pipes, responds to the build-up and release of pressure consequent upon this movement, and so controls the main gas supply. The normal 'Perfecta' control valve can be adapted for use with this device by the insertion of a conversion unit.

Portable Electric Tools

We are asked by S. Wolf & Co., Ltd., to call attention to the institution of a new scheme for closer contact between manufacturer and user. Periodical invitations are extended to firms using portable power tools and interested in portable electric tool development, to be represented by a responsible technician on a series of user panels. An opportunity is offered visitors to see the Wolf electric tools in course of design and manufacture, and this is followed by a round-table discussion on the suggested improvement and development of the portable electric tool from the user angle. We understand that the scheme is proving of value to both sides.

PUBLICATIONS

An essentially practical booklet on *Safety Measures in Chemical Laboratories* has been issued by the Department of Scientific and Industrial Research, available from H.M.S.O. (price 6d.). Originally designed for the guidance of new staff at the Chemical Research Laboratory, it was considered to be of value in a wider field. There are sections on general laboratory operations and the use of apparatus, fire risks and burns, dermatitis, electrical hazards and shock, poisons, poison gases and the treatment of affected persons. Appendices describe the laboratory's safety organisation, and a standard form for the reporting of accidents is also shown.

* * *

Publication No. 2 of the Combustion Engineering Association contains in addition to the Report of the Underfeed Stokermakers' Association on the selection of fuels for underfeed stokers, an Inaugural Report in which the principal objectives of the Association are defined. From this it is apparent that the reorganisation of the Combustion Appliance Makers' Association as the Combustion Engineering Association is to be much more than a mere change of name.

The programme of the Association is essentially one of commercial or market research and concerns not only members of combustion engineering equipment but equally to distributors and users of solid fuels. The preamble to the report reads: 'One of the primary objects of the Combustion Appliance Makers' Association when it was founded in 1935 was to assist

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in the development of a wider market for solid fuels. At that time the output of coal exceeded the demand. Nowadays, the demand exceeds the supply, especially in certain grades, and the problems to be solved are consequently of quite a different order. Makers and users of combustion appliances for solid fuels are now primarily concerned to obtain regular supplies of coal of consistent quality suitable for use with their equipment, which will give them the output for which it was originally designed. These problems are not, therefore, of a kind which can be solved satisfactorily by combustion appliance makers, or users, or distributors of the fuel used in them, acting independently, but only by establishing the closest possible collaboration between them with this object. The first of these problems is that of availability ; the second, the allocation of the various grades of coal to consumers who are equipped to use them most effectively, and with the least trouble; and the third, the building up of commercially sound relative prices for different grades, so that a stable demand can be maintained for all the coal produced.'

The C.E.A. is of the opinion that the greatest single contribution which can be made to the more efficient utilisation of the coal reserves of the U.K. is the development of a rational system of allocating coal supplies, that is, of a system in which distributors function as consumers' agents who can secure supplies of coal of uniform quality of the type and grade required by their customers.

CHILDREN'S DAY AT GOTHIC WORKS

The second post-war annual party for the children of Glover and Main, Ltd., was held at the Gothic Works, Edmonton, recently.

Under the care of several members of the social club of the Gothic Welfare Association the young people gathered in the works canteen for tea and were afterwards entertained to a programme of singing, conjuring, ventriloquism, Punch and Judy show, films and a talent spotting competition.

A part of the assembly at tea.

GAS STOCKS AND SHARES

Perhaps the most notable activity on the singularly dull market last week was the continued drop in industrial shares, which by Mar. 16 had fallen to 112.2—the lowest figure since last July. Not the least reason for this was the publication of the Government's Economic Survey for 1949. However, on Thursday the Industrials Ordinary share index rose 0.4 and thus staged a moderate recovery. The Survey, with its emphasis on continued disinflation and its cold comfort for those hoping for reduction in taxation in the Budget induced bear selling in equities. It would appear that this sharp decline was somewhat extremist in nature, and the reduction in the Socialist majority in the Sowerby election did much to ease the situation. Despite this, general trading was slight and the dealings for the week totalled 31,778, a reduction of 573 on the previous week and of 7,652 on the corresponding period last year.

Dealings in gas stocks totalled 248, the lowest since the end of January and a drop of 38 on the previous week. Price changes were few, as shown in the list given below.

OFFICIAL LIST

Bath, cons. ord. 5 p.c. basic (xd. Mar. 16)	103	—108	— 1
Cheltenham, 5 p.c. basic cons. ord.	104	—109	+ 2
Gas Consolidation, ord. 'A' ...	21/	— 23/	+ 6d.
Imperial Continental, cap. ...	1	—107	— 4
Romford, ord.	111	—116	+ 1

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